United States Environmental Protection Agency
Region IV
POLLUTION REPORT

SITE: Westlake Vinyls
BREAK: 2.10
OTHER: V. 1

Date: Monday, May 08, 2006
From: David Dorian, OSC

To: Terry Stilman, ERRB Steve Spurlin, ERRB

Subject: Initial and Final
westlake stack
2468 Industrial Pkwy, Calvert City, KY
Latitude: 37.0458
Longitude: -88.3242

POLREP No.:	1	**Site #:**	
Reporting Period:	5/8/2006	**D.O. #:**	
Start Date:	5/8/2006	**Response Authority:**	CERCLA
Mob Date:	5/8/2006	**Response Type:**	Emergency
Completion Date:	5/8/2006	**NPL Status:**	Non NPL
CERCLIS ID #:		**Incident Category:**	
RCRIS ID #:		**Contract #**	

Site Description
Westlake Vinyls reported that as much as 1,500 lbs of Benzene and 600 lbs of Napthalene were released from a flare stack at the while the stacks were being cleaned with an alcohol solution. KYDEP reports that material has pooled up on site; however, the material released was a combination of benzene/naphalene mixed with an alchohol cleaning solution. KYDEP responded.

EPA OSC Kevin Turner (Region 5) responded to oversee responsible party lead clean up.

Current Activities
Facility's response contractor, Jeseco, worked during the night and morning hours to collect the material using three vac-trucks. Facility has deployed adequate resources to address the release. No material left the Westlake Vinyl property boundary.

Air monitoring indicated that benzene levels exceeded PELs for a small area around the flare tower. In all other areas, the concentrations were all at or below 1 ppm for benzene. Around the flare tower (i.e. hot zone) the levels of benzene remained around 7 or 8 ppm. In this area the workers were required to wear a respirator (cartridge) as they were cleaning up the pooled liquid and removing contaminated gravel. The benzene levels were decreasing as the day wore on and as more and more liquids were picked up. By the end of the day, the only area of concern that required continued regular air monitoring was around the base of the flare tower.

The facility has sampled spilled material to determine the ratio of alcohol to benzene and napthalene.

As of 1300 May 8, 2008, all personnel were accounted for and no one was injured; 85% of the pooled liquids

were recovered: the "hot" zone continued to be reduced in size; long term planning discussions occurred; and written surface water run-off control plans are in draft. At this point, the emergency phase ended, and KYDEP assumed primary oversite.

Planned Removal Actions

Response contractor will continue to collect spilled chemicals and to remediate contaminated soils.

Next Steps

Westlake Vinyls will send a plan that addresses stormwater issues to KYDEP Water Division.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
Intramural Costs				
Total Site Costs	$0.00	$0.00	$0.00	0.00%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

www.epaosc.net/westlakestack

Natural Resources and Environmental Protection Cabinet
Department for Environmental Protection
Division of Waste Management

Site Inspection Report

Site/Permit ID: **KYD 985 072 008**			Regional Office: **PADUCAH**
Site Name: **WESTLAKE VINYLS INC**			Program: HAZARDOUS WASTE
Site Address: 2468 INDUSTRIAL PARKWAY (SITE) PO BOX 712 (MAILING)			
City: CALVERT CITY	State: Kentucky	Zip: 42029-0712	County: **MARSHALL**
Site Contact: BOB GOLD	Title: ENV SUPERVISOR		Phone #: 270-395-3362
Inspection Type: Routine	Purpose: Multi-media		Not/Com #:
Inspection Date: 6/10/02	Time: Start 0830 a.m. End 1500 p.m.		
Latitude: 37° 03′ 4.3″	Longitude: 88° 20′ 5.8″		
Coordinate Collection Method: GPS Point Average +/- 40 Meters			
Type of Site: CHEMICAL MANUFACTURER			

I. Investigation Results

Findings/Violations/Recommendations:

USEPA NEIC returned to the facility to conduct additional activities related to their multimedia investigation of the site. Sampling and monitoring was done of wastewaters, wastes, and equipment. Some analysis was done onsite in a portable laboratory.

I accompanied NEIC the first day of the inspection. Most of the day was spent in preparation and organization for the rest of the weeks activities. A sample was collected of sludge from secondary wastewater treatment, and samples of wastewater from primary wastewater treatment.

Compliance Status - Not Applicable

II. Comments Including Remedial Measures and Expected Correction Dates

Comments:

The overall inspection report will be completed by NEIC. Compliance status will be determined by NEIC.

III. Environmental/Human Health Impact

Findings/Violations/Recommendations:

Compliance Status - Not Applicable

IV. Documentation

- ☐ Photos taken
- ☐ Record of visual determination of opacity
- ☐ Documents Obtained From Facility

☐ Samples taken by DEP
☐ Samples taken by outside source
☐ Regional Office instrument readings taken
☐ Other documentation
☒ Site Hazard Assessment Completed and Attached
Comments:

Inspector: GARY MORGAN	Title: Environmental Inspector III	Date: 06/24/2002

Overall Compliance Status
☐ **No violations observed**
☐ **No violations observed but impending violation trends observed** – Advisory Action Taken
☐ **Out of Compliance. Non-recurrent deficiency noted** – Verbal notice given or violation corrected at time of inspection.
☐ **Out of Compliance. Non-recurrent administrative or O & M deficiency noted** – Warning Notice issued
☐ **Out of Compliance** – NOV issued

Received By: BOB GOLD	Title: ENV. SUPERVISOR	Date:
Delivery Method: Regular Mail		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAR 6 2002

Ms. Corinne Whitehead, President
Coalition for Health Concern
1891 US 641 North
Benton, KY 42025

Dear Ms. Whitehead:

Thank you for your letter dated February 4, 2002, concerning the Westlake Monomer chemical fire, which occurred on January 29, 2002, at their Calvert City, KY plant. In the letter, you request soil sampling by EPA to analyze for the presence of dioxins, and other harmful substances, which may have been deposited on the ground as a result of this incident. You also request an independent chemical engineering analysis to investigate the cause of the incident.

On January 29, the EPA Region 4 Emergency Response and Removal Branch was notified of the incident, and monitored the response to it. When it was learned that the fire would continue to burn for several hours, EPA dispatched an On-Scene Coordinator (OSC) to the plant site in Calvert City to respond to this incident. Information gathered by EPA at the scene indicated that an uncontrolled release of vinyl chloride from a piping leak was responsible for the fire. Under the conditions that were present during this incident, it is possible that small amounts of certain chemical compounds, including dioxins, may have been formed as a by-product of combustion. In order to determine whether or not dioxins were in fact released, EPA would need to sample and analyze particulate matter from the smoke plume generated by this incident. Because weather conditions during the event were favorable for dispersing the smoke plume, we do not anticipate being able to find sufficient quantities of particulate matter to make that determination. Therefore, we do not plan to conduct soil sampling in the aftermath of this air release.

EPA agrees that a full analysis into the cause of this air release is warranted. Federal regulations promulgated under Section 112(r) of the Clean Air Act require the facility to conduct an investigation into the cause of the accident and to implement a system to address the findings of the investigation. The authority for implementing the 112(r) program in Kentucky has been delegated to the Kentucky Department for Environmental Protection (KYDEP). EPA plans to coordinate with KYDEP in gathering additional information regarding this incident, and we will respond to any requests by KYDEP for additional assistance in this matter.

We appreciate your desire to protect and preserve the environment, and hope you find this information helpful. If EPA may be of further assistance, please feel free to contact OSC Art Smith at (502) 582-5161, for any questions pertaining to EPA's emergency response to this incident. For questions related to EPA's 112(r) program, contact Victor Weeks at (404) 562-9189.

Sincerely,

J. I. Palmer, Jr.
Regional Administrator

We appreciate your desire to protect and preserve the environment, and hope you find this information helpful. If EPA may be of further assistance, please feel free to contact OSC Art Smith at (502) 582-5161, for any questions pertaining to EPA's emergency response to this incident. For questions related to EPA's 112(r) program, contact Victor Weeks at (404) 562-9189.

Sincerely,

J. I. Palmer, Jr.
Regional Administrator

Asmith/EL ext 28779/Westlake citizen.wpd. A

R D Rhyne 1/24/02
Art Smith, OSC

R. P Rhyne 2/26/02
Carol Monell, Chief RMS

Myron D. Lair, Chief ERRB

Richard D. Green, Director WMD 2/27/02

KW for BH 3/1/02 MHF
Mary Holiday-Frazier- ARA

J.I. Palmer, Jr., Regional Administrator

Mary Holiday-Frazier- ARA

Controlled Correspondence For
REGION 4

CONTROL NO : R4-0200020 | **ORIG. DUE DATE:** 02/28/2002

STATUS: PENDING

CORRES. DATE: 02/04/2002
RECEIVED DATE: 02/07/2002
ASSIGNED DATE: 02/07/2002
CLOSED DATE:

FROM: CORINNE WHITEHEAD, PRESIDENT
ORG: **COALITION FOR HEALTH CONCERN**
SALUTATION:
CONSTITUENT:

TO: REGIONAL ADMINISTRATOR
TO ORG:
SUBJECT: REQUEST FOR INVESTIGATION INTO CAUSE OF EXPLOSTION AND TESTING FOR HARMFUL SUBSTANCES

ASSIGNED: WASTE MANAGEMENT DIVISION

COPIES OF INCOMING PROVIDED TO:

SIGNATURE: **Regional Administrator**
R4 COMMENTS:

R4 INSTRUCTIONS:

Please prepare response for signature of J. I. Palmer, Jr., Regional Administrator. If any questions, contact Julia at X28302. THANKS.

	Assigned	Date Assigned	Code/Status	Date Completed by Assignee	Date Returned to R4 :
Lead	WD	02/07/2002	ACTION	-	-

Control to Waste
Due 2/28/02

Coalition for Health Concern

1091 US 641 North
Benton, Kentucky 42025
270-527-1217

February 4, 2002

Regional Administrator
U S EPA Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Dear Sir:

Enclosed is a copy of our letter to the Secretary for the Cabinet of Natural Resources in Kentucky regarding an explosion and chemical fire on January 29, 2002 at Westlake Chemical, Calvert City, Kentucky. Westlake (Formosa Chemical) took over the operation of the B.F. Goodrich Chemical Facility which has an NPL Superfund Site.

Video footage and personal witnesses show the chemical fire was a major event. We ask that soil samples be made at the site and downwind to determine the amounts of DIOXIN and other harmful substances deposited. We further request that thorough chemical engineering analysis be made by an independent entity to determine the cause of the explosion, and massive releases of chemicals.

We will appreciate your attention to this matter. We consider the accident to be a major safety and health concern to a multi-county area in Western Kentucky and Southern Illinois.

Sincerely

Corinne Whitehead

Corinne Whitehead On behalf of members
President

Coalition for Health Concern

1891 US 641 North
Benton, Kentucky 42025
270-527-1217

February 1, 2002

The Honorable
James Bickford
Secretary
Cabinet for Natural Resources
and Environmental Protection
Capitol Tower Plaza Building
Frankfort, Kentucky 40601

RE: ACCIDENT January 29, 2002
Westlake Chemical Corporation
Calvert City, Kentucky 42029

Dear Secretary Bickford:

This letter is to file a complaint regarding the operation of Westlake Chemicals, Calvert City, Kentucky:

1) The massive releases of chlorine and vinyl chloride beginning just after the 12 noon January 29 accident requires thorough investigation by independent analysts with a report to you and the public. We question the quantity of chemicals released after viewing videos of the fire. We are thankful that no one died during the Westlake accident; however, the public, workers, and responders were exposed to very HIGH LEVELS OF DIOXIN due to the combustion of chlorinated chemicals. Dioxin is noted as more toxic than aflatoxin to humans and animals. The exposures received from Westlake on January 29 can be expected to pose health and acute genetic effects for years and generations to come. I enclose informational material on dioxin.

2) We are saddened and outraged by the absurd decision to allow the chlorine and vinyl chloride to continue to burn well into the night as a "controlled burn". The population was thereby subjected to many additional unnecessary hours of DIOXIN exposure. The accident appears to have been managed primarily in the interest of Westlake and not in the interest of public health and safety. Westlake sets over an enormous propane storage site. Sirens were not sounded in Calvert City or Livingston County (downwind). Sirens were sounded in several adjacent counties.

3) In years past, we have contacted the Department of Natural Resources regarding the apparent "out of control" operation of the plant. For years, we have received many calls, usually late at night from residents who said, "the ground is shaking", the flare was "oscillating and roaring", "black smoke is belching from the flare". In addition, the heat was intense, at a distance of a quarter mile or further from the plant on the public highway. The routine operation of the vinyl chloride and catoxide flares is equivalent to using the flares as an incinerator for dangerous chemicals without emissions or pollution controls.

4) We urge you to assure a thorough investigation by independent analysts to determine the causes of the operational failure at Westlake leading to the explosion, fire, and massive release of chemicals.

Respectfully,

Corinne Whitehead

Corinne Whitehead On behalf of members
President

cc: Governor Paul Patton
U.S. EPA Regional Director
Office Ombudsman US EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-8909

WD-RCRA

Mr. Jerry Farmer
Facility Manager
Westlake Monomers Corp.
P.O. Box 712
Calvert City, KY 42029

SUBJ: Compliance Evaluation Inspection (CEI)
Westlake Monomers Corp.
EPA ID No. KYD 985 072 008

Dear Mr. Farmer:

The purpose of this letter is to transmit a copy of the October 20-22, 1997, CEI report referenced above.

The enclosed report indicates violations of the Resource Conservation and Recovery Act (RCRA) have been discovered. A copy of this report has been transmitted to KYDEP. Additional findings may be cited in the report of KYDEP.

If questions arise with regard to this matter, please contact Ralph T. Cline at (404) 562-8598.

Sincerely,

Jeaneanne M. Gettle
North Enforcement and Compliance Section
RCRA Enforcement and Compliance Branch

Enclosure

cc: Robert H. Daniel, KYDEP - Frankfort
Marjorie Williams, KYDEP - Paducah

RCRA INSPECTION REPORT

1) Inspector and Author of Report

Ralph T. Cline, Environmental Engineer
South Enforcement and Compliance Section
Enforcement and Compliance Branch
Waste Management Division
United States Environmental Protection Agency (USEPA)

2) Facility Information

Westlake Monomers Corp. (Westlake)
Westlake CA&O

Location:
Highway 1523
Calvert City, KY 42029

Mailing Address:
P.O. Box 712
Calvert City, KY 42029

EPA ID No. KYD 985 072 008

3) Responsible Official

Jerry Farmer - Facility Manager
(305) 525-6742

4) Inspection Participants

Donald R. Hise, Manager-Safety, Health and Environment (Westlake)
Samuel Willett, Principal Engineer-Ethylene (Westlake)
Robert Whiteford, Senior Process Engineer-Ethylene (Westlake)
Robert Gold, Environmental Coordinator-Vinyl/EDC (Westlake)
James Best, Process Engineer-Vinyl/EDC (Westlake)
B. Parrish Roush, Kentucky Department for Environmental Protection (KYDEP), Paducah Office
Giri R. Bhavani, KYDEP, Frankfort Office
Ralph Cline, USEPA

5) Date of Inspection

This inspection occurred October 20-23, 1997, and is the principal subject of this report.

6) Applicable Regulations/Requirements

Applicable requirements in Kentucky Administrative Regulations (401 KAR) Chapters 30 through 38, which are equivalent to 40 C.F.R. Parts 260 through 270.

7) Purpose of Inspection

This was a Compliance Evaluation Inspection (CEI) and Oversight Inspection. The CEI was conducted to determine the compliance status of Westlake with RCRA regulations. Westlake has notified EPA as a Large Quantity Generator (LQG).

8) Facility Description

The Westlake Group consists of eight companies in the United States. The Group is based in Taiwan and individual company ownership is divided according to bank ownership. The facilities under Group ownership at the Calvert City site consist of Westlake Monomers (vinyl chloride/ethylene dichloride), Westlake CA&O (chlor-alkali and olefins) and Westlake PVC (polyvinyl chloride). These facilities were acquired from former owner B.F.Goodrich. Of these, only Westlake Monomers and Westlake CA&O facilities were included in the subject inspection.

9) Findings

Olefins

Westlake produces ethylene, the monomer used in vinyl chloride synthesis, from the steam cracking of propane. Liquid propane (95% propane, 5% ethane/butane) arrives by pipeline and and is stored in a 250,000 barrel limestone cavern. The 360 MM lb./yr ethylene unit (Fig. 1), which was started in 1964, also produces propylene, mixed C_4s (65% butadiene), pyrolysis gasoline and heavy fuel as significant byproducts. Pyrolysis gasoline is shipped by barge to Texas Aromatics (Houston, Texas) as a gasoline blending stock. Fuel oil is shipped by tank truck to LWD Corp., Calvert City, as fuel for hazardous waste incinerators.

Hazardous wastes generated from the ethylene plant appear to be limited to those generated during shutdown. These are typically cleaning wastes from the furnace water quench system, heat exchangers and tank bottoms.

Chlor-Alkali

Westlake operates a 350 ton/day mercury cell chlorine plant which started operation in December 1966, and contains 36 cells (Figure 2). The construction of mercury cell chlor-alkali plants came to an abrupt halt in the 1970s due to concern about mercury emissions. The mercury cell uses a titanium anode coated with ruthenium oxide and the cathode is a sloped pool of flowing mercury (DeNora Cell). Saturated salt brine is pumped across the cell where electrolysis takes place and chlorine is generated. The electrolysis also produces a mercury-sodium alloy (amalgam) which is later decomposed to 50% caustic by reaction with water. An advantage of the mercury cell processes is that commercial grade 50% caustic is produced directly, without the use of evaporators.

Rock salt is shipped to the facility from North American Salt in Louisiana. A saturated solution is prepared, in tanks, by dissolving rock salt in water and then treating with caustic and sodium carbonate to precipitate iron, magnesium and manganese, as hydroxides. A depleted brine stream, containing mercury from the electrolytic cells, is also returned to the dissolver tanks. The treated brine stream is sent to a clarifier where some removal of sludge occurs and then to filters for further sludge removal. Blowdown from the clarifier and backwash from the brine filters are sent to the wastewater treatment plant KO71 solids treatment system. In this system, treatment consists of pH adjustment with sulfuric acid, sodium hypochlorite addition and filtration on a vacuum filter acid washed with HCl. The treated solids are sent to a sanitary landfill while the filtrate containing mercury, in the form of soluble mercuric chloride, is sent to the second phase of the wastewater treatment system. In the second phase, the filtrate is collected in a tank along with cell room liquids and process area storm runoff. These wastewaters are pH adjusted, treated with sodium hydrosulfide to precipitate mercuric sulfide, and filtered. Filter cake is managed as a K106 hazardous waste and sent to Chemical Waste Management, Emelle, AL. Filtrate, after pH adjustment with caustic, is passed through a carbon polishing filter prior to

discharge to the Tennessee River under a KPDES permit. Westlake plans to dispose of the filter contents to Chemical Waste Management, Emelle, Al.

The amalgam is decomposed in a separate vessel packed with graphite by reaction with water to form 50% caustic, mercury and hydrogen. Mercury is recycled back to the process. Hydrogen contains entrained mercury which is removed in a system consisting of coolers, a Brinks demister, and an activated carbon adsorber. Mercury accumulating in the cooler exit gas line is drawn off in a five gallon pail (Pix 1), while mercury accumulating in the bottom of the demister is drawn off into plastic jugs (Pix 2) and all containers are hand carried to a portable tank beneath the cell room for reintroduction into the cells. The carbon adsorber (Pix 3) contents have historically been exported to Canada, however, due to the loss of export license, Westlake must now find another disposal outlet. Purified hydrogen is sold to the adjacent ISP facility for hydrogenation of diol intermediates. Graphite packing may develop an electrical capacitance due to deposits and attrition, and is periodically removed with the metal basket and water washed to a metal pan (Pix 4). Inspectors observed mercury on the pad in and around the washing area. If the graphite cannot be reactivated, it is packaged in drums as a D009 hazardous waste and reprocessed in a retort at Olin Corp., Charleston, WV. Graphite wash water is sent to the waste water treatment plant. Open floor drains in the vicinity of the hydrogen processing system were observed to contain mercury believed to be released to the surrounding floor (Pix 5). Mercury is periodically removed from drains by hand dipping and hand carried to the cell room portable tank for return to the process.

TN ?

Reclaimed mercury appears to be a secondary material subject to the provisions of 40 C.F.R. § 261.4(a)(8)(i). The provisions of this regulation require, among other things, that only tank storage be involved and that the entire process is enclosed by being entirely connected with with pipes or other comparable means of conveyance. The process of recovering reclaimed mercury does not appear to meet the exemption provisions of 40 C.F.R. § 261.4(a)(8)(i), and is therefore a solid waste. According to the provisions of 40 C.F.R. § 262.11, a person who generates a solid waste must determine if that waste is a hazardous waste.

Westlake is in violation of 40 C.F.R § 262.11, for failing to make a hazardous waste determination on reclaimed mercury.

Westlake is in violation of 40 C.F.R. § 264.31, for failure to operate a facility in a manner which minimizes the possibility of a release of hazardous waste or hazardous waste constituents.

Chlorine, generated from the cells, is saturated with water and also contains trace amounts of salt, organic chlorides and nitrogen trichloride (NCl_3). The removal of NCl_3 is essential to avoid buildup in the chlorine purification stages, as it is unstable and can decompose explosively. In 1969, a tank trailer containing this material exploded at the plant. Nitrogen compounds such as NCl_3 arise from the use of ammonium nitrate as a blasting agent at the salt mine. Chlorine purification includes cooling and sulfuric acid drying for water removal, and NCl_3 removal by extraction in carbon tetrachloride (CCl_4) prior to compression. The NCl_3/CCl_4 mixture is removed to a 500 gallon portable blowdown tank at approximately weekly intervals (Pix 6). The portable tank is transported to holding tank #1805 (Pix 7) upstream of A & B steam stripper towers (Pix 8) located near the wastewater treatment plant, prior to pumping into the strippers. The A & B towers are intended to remove organics from process and pad water, emanating from the EDC and VCM plants, prior to release into the secondary treatment plant. Westlake believes that NCl_3 decomposes in the stripper, while the organics/water mixture is condensed into a decanter. Tail gas from the decanter is sent to the primary incinerator, while the liquid phase, containing some water, CCl_4, and EDC is removed to the EDC crude storage tank and then to the EDC Plant heads column. At the point of collection in the 500 gallon portable storage tank, Westlake estimates that the NCl_3 concentration is in the range of 500-1000 ppm, and is thought by Westlake to be stable based upon product knowledge. Documentation of this product knowledge was not available during the inspection. Waste CCl_4 is a toxicity characteristic hazardous waste and a listed hazardous waste with the EPA Hazardous Waste Numbers D019 and F001, respectively. In the NPDES Permit (KY0003484) issued to Westlake, allowable wastewater streams from the EDC/VCM and Carbopol plants are identified as streams to be steam stripped prior to entry into the secondary treatment plant and discharged through Industrial Outfall # 002. The Permit does not specify the NCl_4/CCl_4 waste mixture treated in the steam strippers. Therefore, this mixture is not covered by a wastewater treatment plant exemption, and must be managed as a hazardous waste with the EPA Hazardous Waste Numbers D019 and F001. The 500 gallon portable tank is a satellite accumulation container holding more than 55 gallons of

hazardous waste, exceeded this amount of accumulation for more than three days, and is not labeled with the words "Hazardous Waste".

Westlake is in violation of 40 C.F.R § 262.34 (c)(1) & (2), for accumulating more than 55 gallons of hazardous waste in a container and exceeding by more than three days this level of accumulation, and is further derivatively in violation of 40 C.F.R § 262.34(a)(1)(i), 262.34(a)(2) & (3), for non-compliance with the container requirements of Subpart I of 40 C.F.R. Part 265 and not marking the start date of each period of accumulation, and labeling with the words "Hazardous Waste".

Westlake is in violation of Section 3005(a) of RCRA, 42 U.S.C. § 6930, and 40 C.F.R Part 270.10, for failing to obtain a permit for the treatment, storage or disposal of a hazardous waste.

Westlake does not meet the operating standards and record keeping requirements for process vents associated with a steam stripper unit (A or B) managing DO19 and FOO1 hazardous wastes with an organic concentration of at least 10 ppmw, as required by 40 C.F.R. Part 265, Subpart AA.

Westlake does not meet the test method and record keeping requirements for leaks from equipment handling DO19 and FOO1 hazardous wastes with organic concentrations of at least 10% by weight, as required by 40 C.F.R. Subpart BB.

Vinyl Chloride

Westlake produces vinyl chloride monomer (VCM) by the thermal cracking of ethylene dichloride (EDC), with hydrogen chloride as a by product (Fig. 3). The gaseous reaction products, together with unconverted EDC, are cooled and quenched with EDC prior to separating out HCL and product VCM. After VCM removal, the bottoms from this step, containg EDC and chlorinated hydrocarbons, is subject to further distillation in a lights column to separate low boiling chlorinated hydrocarbons from unconverted EDC and high boiling chlorinated hydrocarbons. EDC is recycled back to the cracking process. Low boiling

chlorinated hydrocarbons are stored in tanks and tank cars for introduction into the Catoxid process, which will be described later. High boiling chlorinated hydrocarbons are sent to a vacuum column in the EDC distillation section, as described later.

Ethylene Dichloride

EDC is produced by two separate manufacturing processes, oxychlorination and direct chlorination.

In the oxychlorination process (Fig 4), which consists of three lines, HCl and oxygen are reacted with ethylene in a fluidized bed catalytic reactor containg an alumina catalyst impregnated with a copper salt. Two lines operates on oxygen from an on-site plant, while a third line operates on oxygen-enriched air. In addition, one oxygen based line also receives reactor gases exiting the Catoxid process reactor. The Catoxid process will be described later. Hot gases from the oxychlorination reactors are cooled in a quench column and then to a separator where the organic phase is fed to an EDC distillation section along with organic reaction products from the direct chlorination and VCM processes.

In the direct chlorination process (Fig. 5), chlorine and ethylene react in a circulating liquid phase reactor containing an iron catalyst. The reaction is exothermic and the reaction heat is used to distill EDC in the product EDC column located in the EDC distillation section.

In the EDC distillation section, crude EDC from the oxychlorination process containing low/high boiling chlorinated hydrocarbons and EDC, are processed in a heads column to remove low boiling chlorinated hydrocarbons for processing in the Catoxid process. Bottoms from the heads column are further processed in a product column, along with reaction products from the direct chlorination process, to return EDC to cracking. Bottoms from the product column are combined with bottoms from the high boiling chlorinated hydrocarbons column at the VCM process and fed to the vacuum column. The vacuum column concentrates high boiling chlorinated hydrocarbons produced in the VCM and EDC processes. Bottoms from the vacuum column are stored as feedstock for the Catoxid process.

Catoxid Process

The Catoxid process reactor (Fig. 4) performs a catalytic oxidation on the chlorinated feed stocks in the presence of oxygen in a fluidized bed of activated alumina catalyst. This converts the high/low boiling chlorinated hydrocarbons (heavy and light Catoxid feedstocks) to HCl, water and CO_2. Hot reaction gases are cooled and fed to one of the EDC oxychlorination process reactors to utilize contained Cl in the HCL by reaction with ethylene.

Heavy and light Catoxid feedstock is stored in Tanks 2, 7 and 9 (Pix (9). Tank # 7 is agitated to prevent stratification of water on top of Catoxid feedstock. On occasion, water may be withdrawn from the top and sent to the wastewater treatment tank. The water phase contains HCl and is corrosive. At the time of the inspection (10/21/97), Westlake documented that Tanks 2, 7 and 9, contained 24 MM pounds of Catoxid feedtock. In addition, another 6.5 MM pounds of Catoxid feedstock was being stored in 36 full tank cars (@ 180,000 pounds/car) on the plant rail siding. Westlake indicated this be the capacity of the plant rail siding.

In response to a referral by the State of Kentucky, Department of Work Place Standards, Occupational Safety and Health (KYOSHA), KYDEP, on December 6, 1996, began the investigation of a reported large quantity of waste from Westlake being stored at the rail yard in the Littleville area of Paducah, KY. KYDEP contacted Westlake who acknowledged that 88 tank cars of Catoxid feedstock were being stored at the rail yard, as a consequence of the malfunction of the Catoxid process reactor. Westlake reported that the reactor experienced a down time of 40%. On June 10, 1997, a tank car stored at the same Littleville rail yards and containing Catoxid feedstock, developed a leak which triggered an emergency response by KYDEP. Temporary repairs were made to the tank car by Westlake personnel prior to movement back to the plant for unloading. The KYDEP Incident Report stated that the area of the spill was 15' x 20' on the outside of the track and 3' in diameter under the rail car. A contractor (CECOS) was engaged to perform the clean up and collect samples to verify removal.

Catoxid feedstock may be a secondary material being returned to the process from which it has been generated, and may not be a solid waste provided it can meet the

provisions of 40 C.F.R. § 261.4(a)(8). Catoxid feedstock is derived from bottoms generated at the EDC and VCM plants, then sent to the Catoxid plant for processing. Therefore, Catoxid feedstock is not returned to the process from which it was generated.

Among others, the provisions of 40 C.F.R. § 261.4(a)(8) require that only tank storage is involved, and the entire process is closed by being entirely connected with pipes or other means of conveyance. 40 C.F.R § 260.10 states that a tank is a stationery device, while a container means any portable device in which material is stored, transported, or otherwise handled. Thus, storage in tank cars constitutes storage in containers.

A another provision of this regulation, requires that secondary materials are never accumulated in such tanks (rail cars) for over 12 months without being recycled. This speculative accumulation aspect has not been fully established.

Catoxid feedstock does not appear to meet the exemption provisions of 40 C.F.R. § 260.4(a)(8), and is therefore a solid waste. A solid waste derived from heavy ends in the distillation of ethylene dichloride in ethylene chloride production is a listed hazardous waste with the EPA Hazardous Waste No. KO19. Similarly, a solid waste derived from heavy ends in the distillation of vinyl chloride in vinyl chloride monomer production is a hazardous waste with the EPA Hazardous Waste No. KO20. A material safety data sheet (MSDS) for Catoxid Feed issued by Westlake (7/13/90) indicates a flash point of <150 F, and is therefore a characteristic hazardous waste with the EPA Hazardous Waste Number DOO1.

The tank cars used for the storage of Catoxid feedstock are satellite accumulation containers which hold more than 55 gallons of hazardous waste, have exceeded this amount of accumulation for more than three days, and are not labeled with the words "Hazardous Waste".

Westlake is in violation of 40 C.F.R. 262.34(c)(1) & (2), for accumulating more than 55 gallons of hazardous waste in a container, exceeding by more than three days this level of accumulation, and is derivatively in violation of 40 C.F.R. § 262.34(a)(1)(i), 262.34(a)(2) & (3), for non-compliance with the container requirements of Subpart I of 40 C.F.R. Part 265 by not marking the

start date of each period of accumulation, and labeling with the words "Hazardous Waste".

Westlake is in violation of Section 3005(a) of RCRA, 42 U.S.C. § 6930, and 40 C.F.R. Part 270, for failing to obtain a permit for the storage of a hazardous waste.

Westlake has permitted the off-site shipment of a hazardous waste to an unpermitted storage location and accepted the return of that hazardous waste to the facility. In so doing, Westlake contributed to an emergency response which presented an imminent and substantial endangerment to health or the environment.

Westlake is in violation of 40 C.F.R. § 262.20, for failing to prepare a manifest for the off-site transportation of hazardous waste in tank cars.

Westlake is in violation of Section 3005(a) of RCRA, 42 U.S.C. § 6930, and 40 C.F.R. Part 270, for failing to obtain a permit for the off-site storage of hazardous waste in tank cars , and prior to the acceptance of tank cars containing hazardous waste at the facility.

Miscellaneous

Westlake must immediately cease the practice of storing hazardous waste at an off-site location in tank cars without a permit, thereby presenting a potential imminent and substantial endangerment to health or the environment.

Westlake must present detailed documents to demonstrate that hazardous waste, in the form of Catoxid feedstock stored in tank cars, has not been speculatively accumulated.

A review of records was not performed during this CEI due to time constraints.

10). Signed

Ralph T. Cline
Inspector

3/31/98
Date

11). Concurrence

Jeaneanne M. Gettle, Chief
North Enforcement and Compliance Section
RCRA Enforcement and Compliance Branch

04/08/98
Date

FIGURE 5

HIGH TEMPERATURE DIRECT CHLORINATION (HTDC)

EHTYLENE (C2H4) + CHLORINE (CL2) ▸EDC (C2H4CL2)

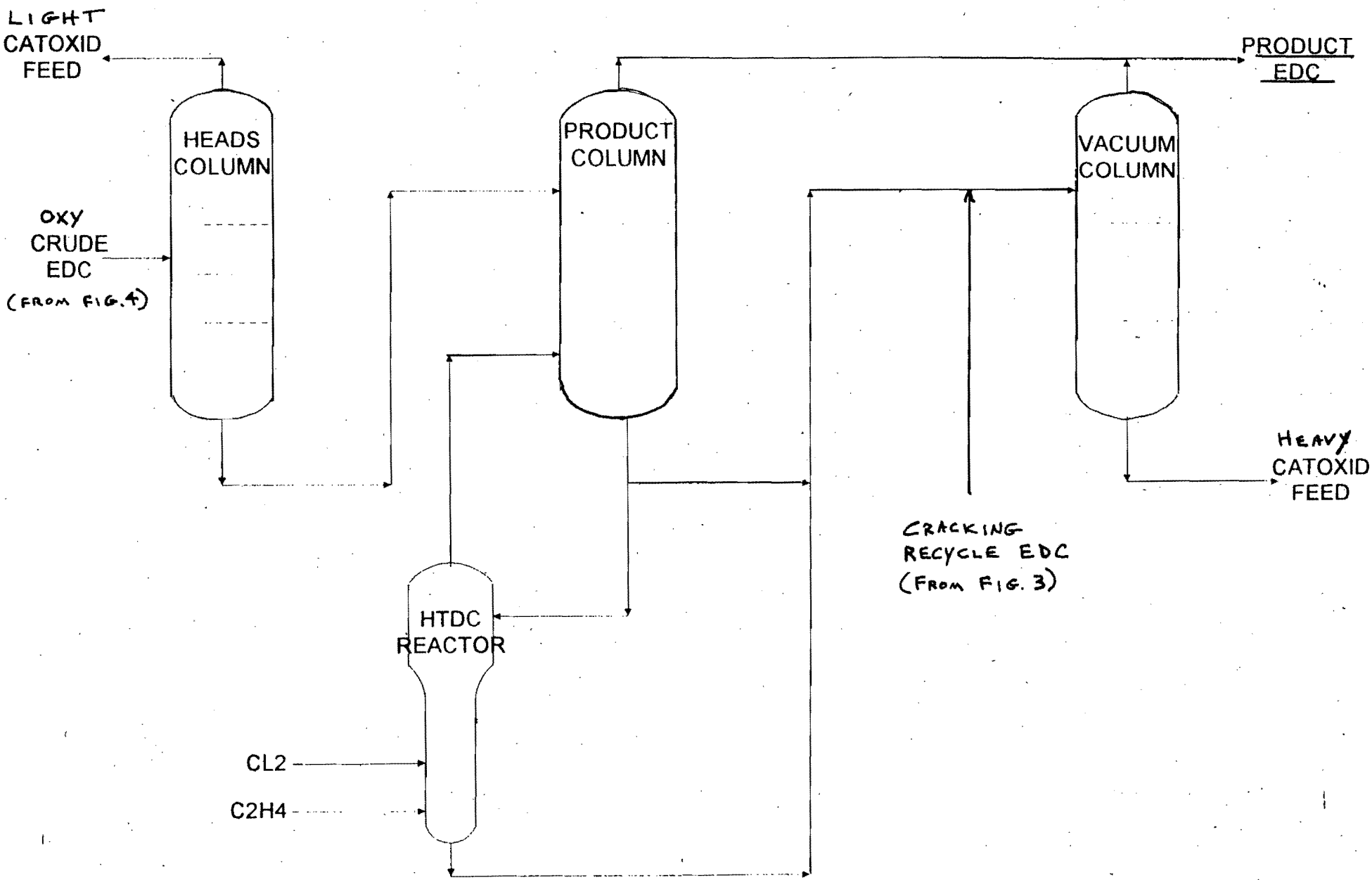


FIGURE 4

OXYCHLORINATION PROCESS AND CATOXID PROCESS

OXYCHLORINATION----- ETHYLENE (C_2H_4) + HYDROGEN CHLORIDE (HCL) + OXYGEN (O_2) → EDC ($C_2H_4Cl_2$) + WATER (H_2O)

CATOXID----- CHLORINATED INTERMEDIATES ($C_2H_xCl_y$) + HEAT → HYDORGEN CHLORIDE (HCL) + WATER (H_2O)

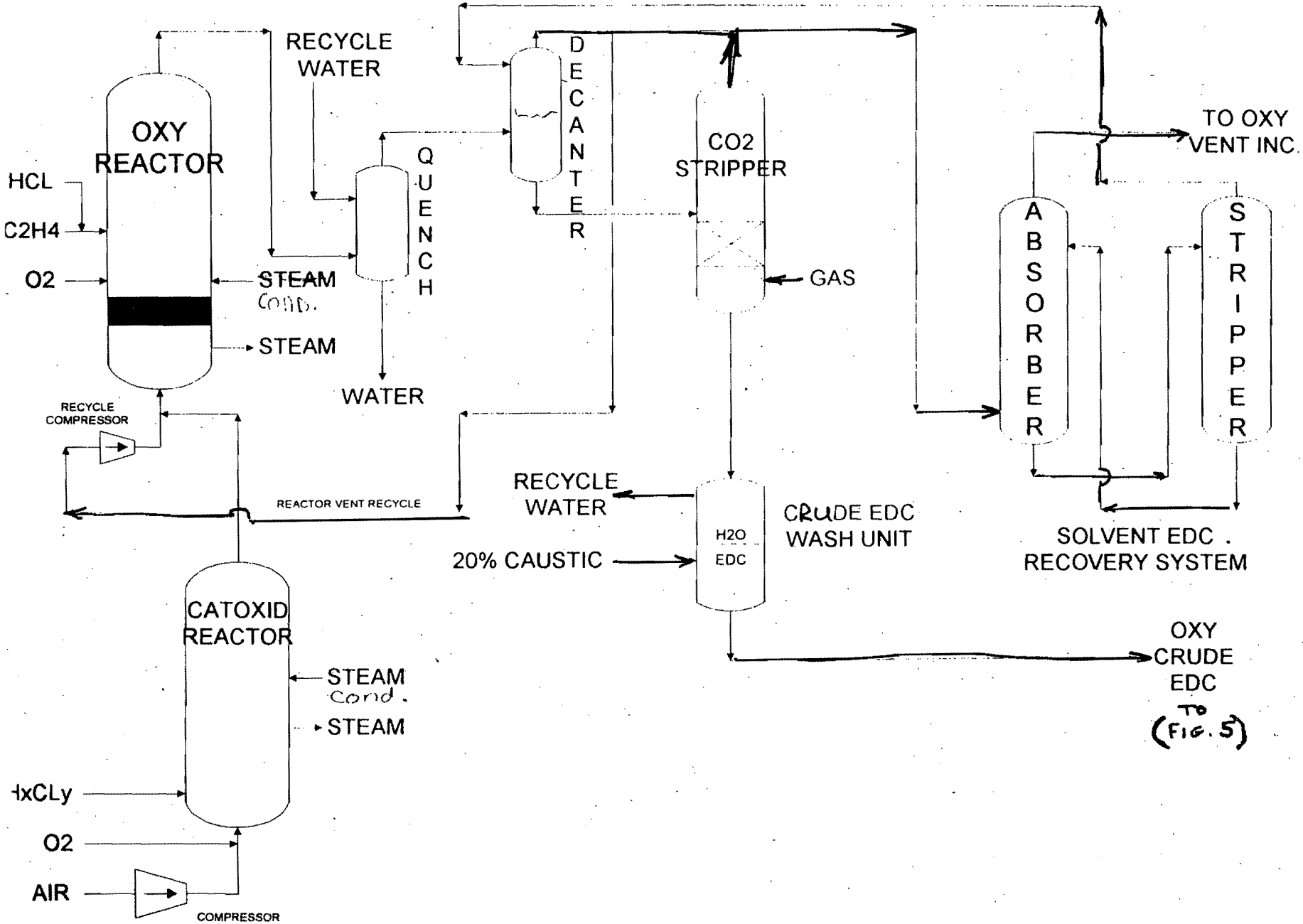
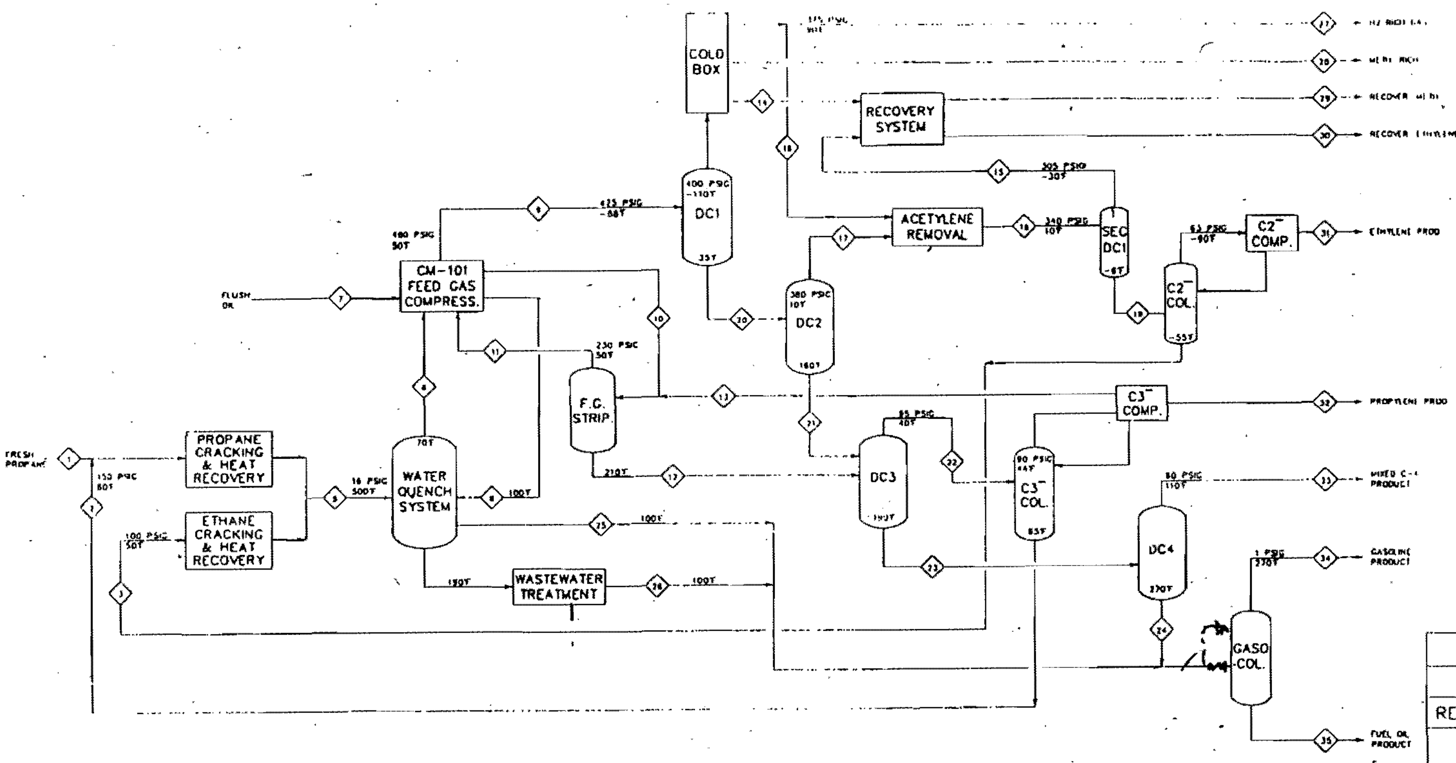


FIGURE 1



DOCUMENT CONTROL COPY NO. ______

REV.	DATE	DESCRIPTION	DWN.	APP.

BFGoodrich
Chlor-Alkali & Olefins Division
CALVERT CITY, KENTUCKY

OLEFINS PLANT

BASIC PROCESS FLOW DIAGRAM

S Willett 3/19/97
RBurkett 3/19/97

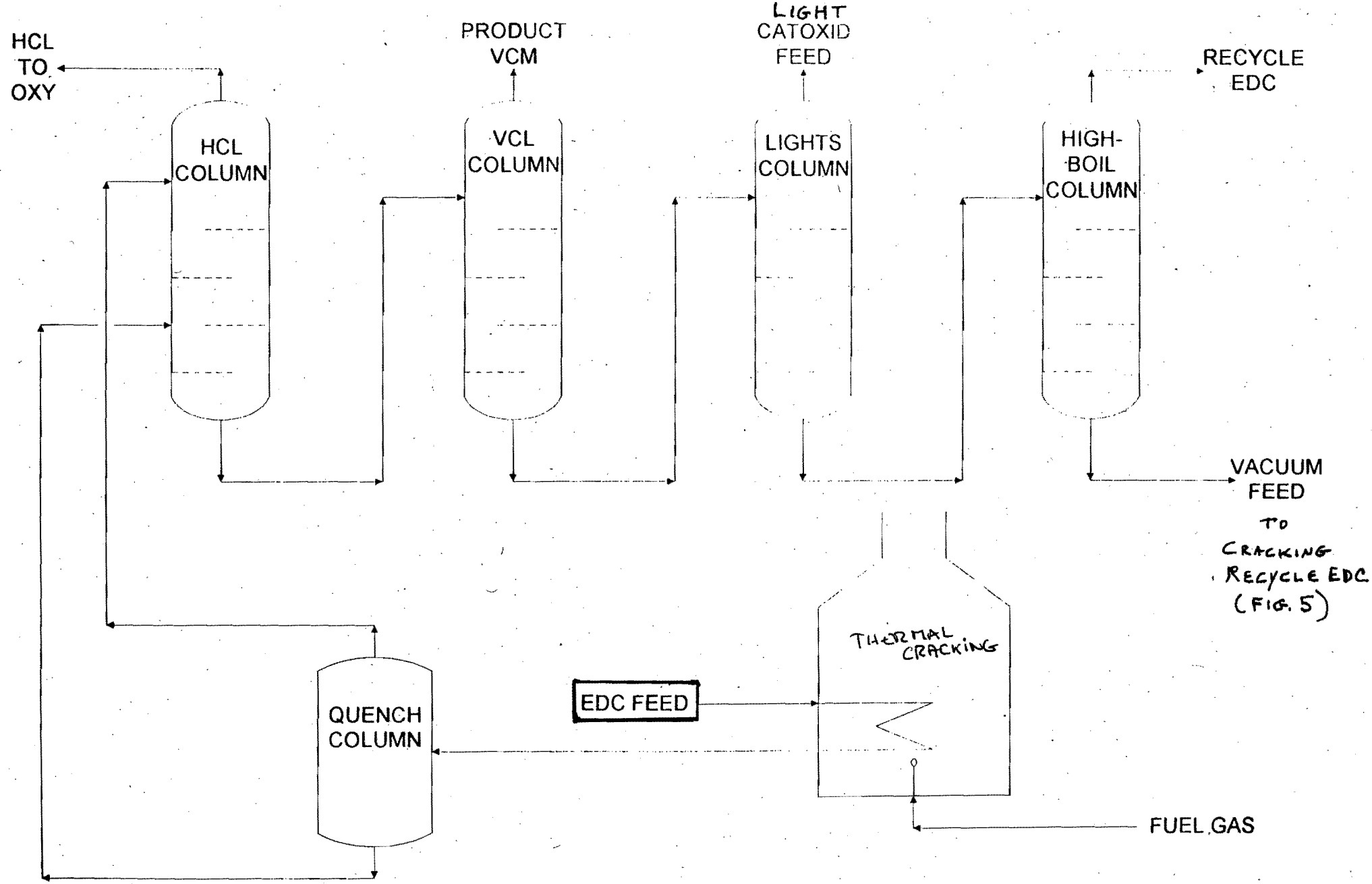
SJS CADD INC.
F014F002

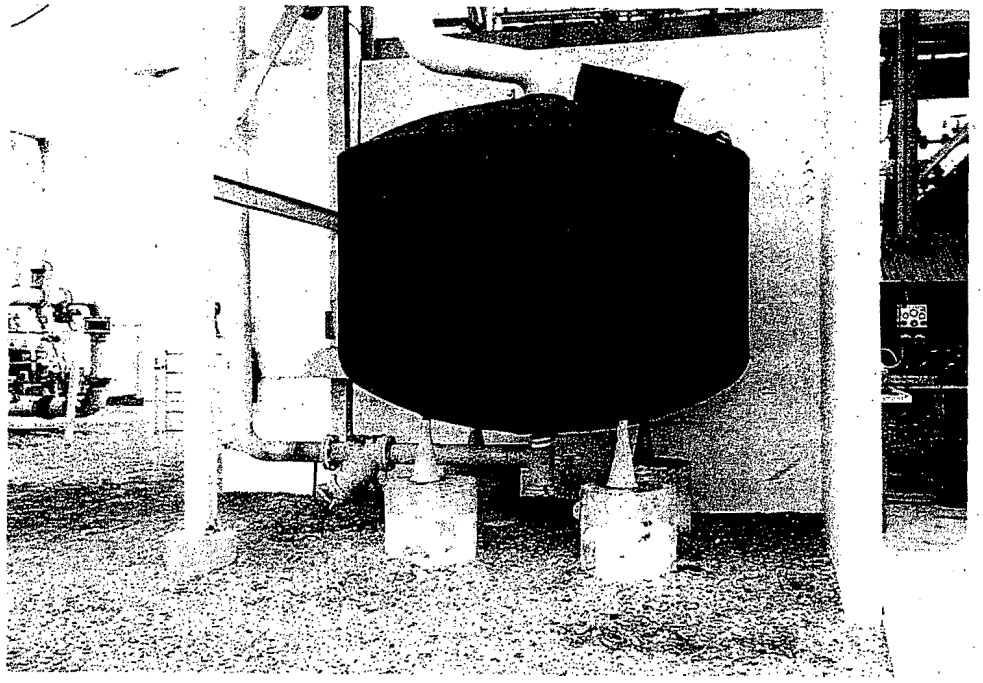
DRAWN BY SJS	APPROVED BY ______
DATE 2-14-97	DATE ______
JOB NO. ______	DJ. NO ______
REF. DWG — EA NO. ______	SK-B PFD-2

FIGURE 3

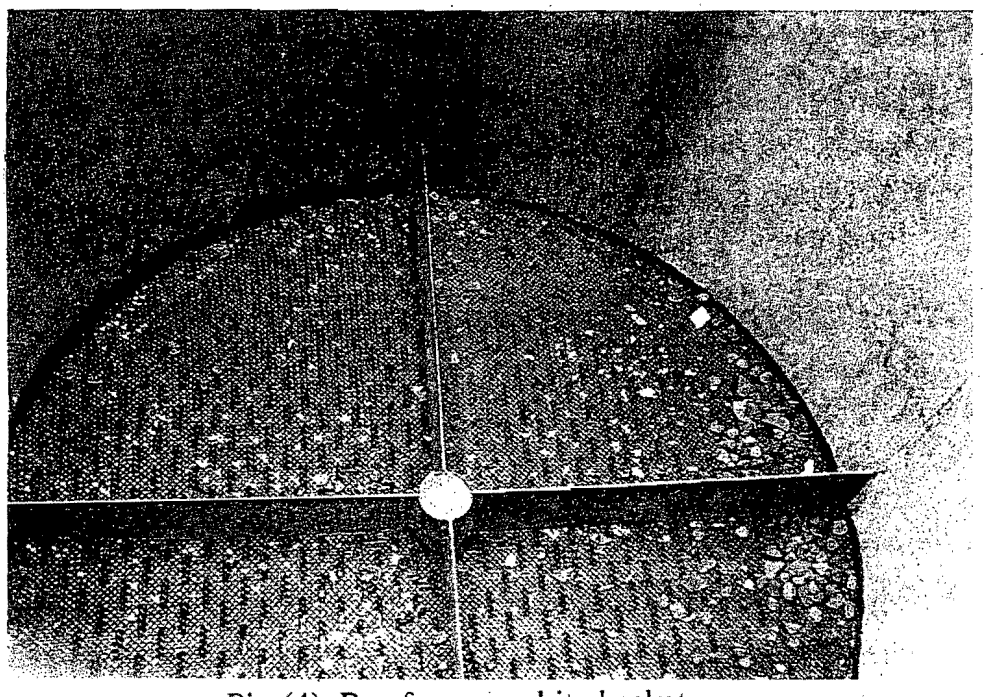
WESTLAKE MONOMERS, CORPORATION
EDC CRACKING PROCESS

$$EDC\ (C_2H_4Cl_2) + HEAT \longrightarrow HYDROGEN\ CHLORIDE\ (HCl) + VINYL\ CHLORIDE\ (VCM)$$

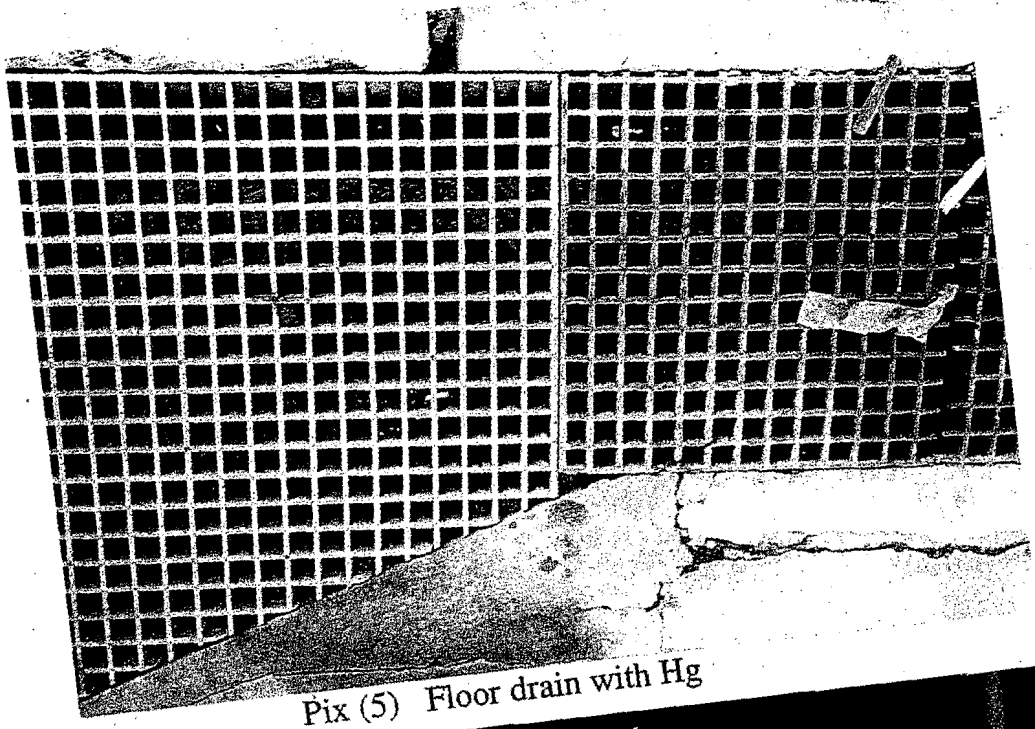




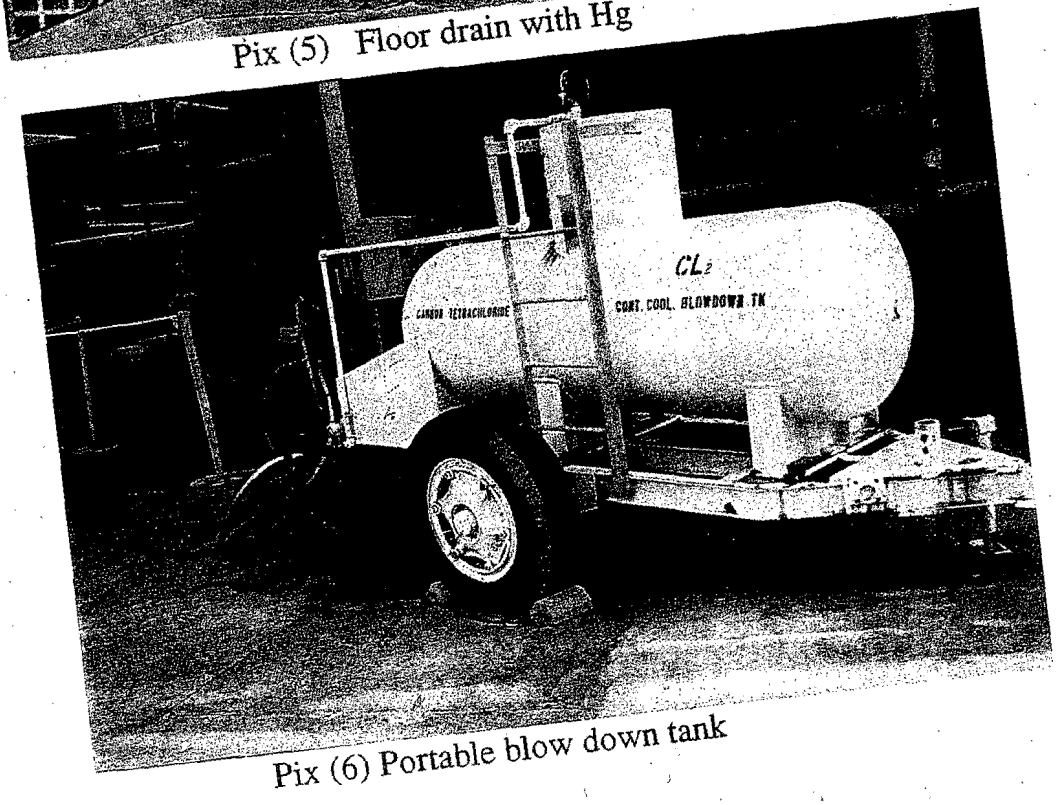
Pix (3) Carbon Adsorber



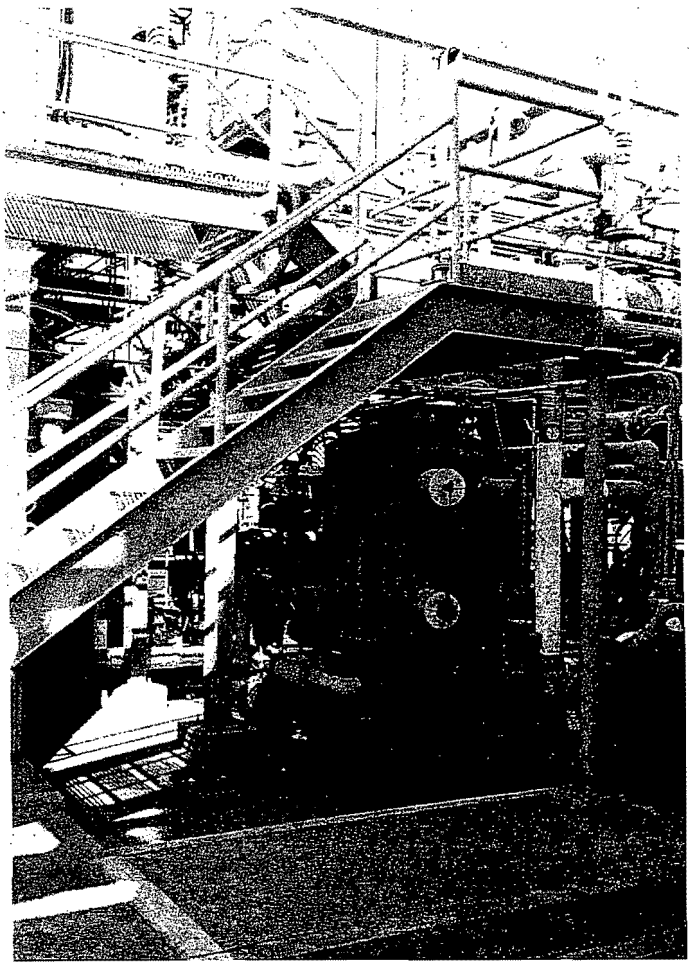
Pix (4) Pan from graphite basket



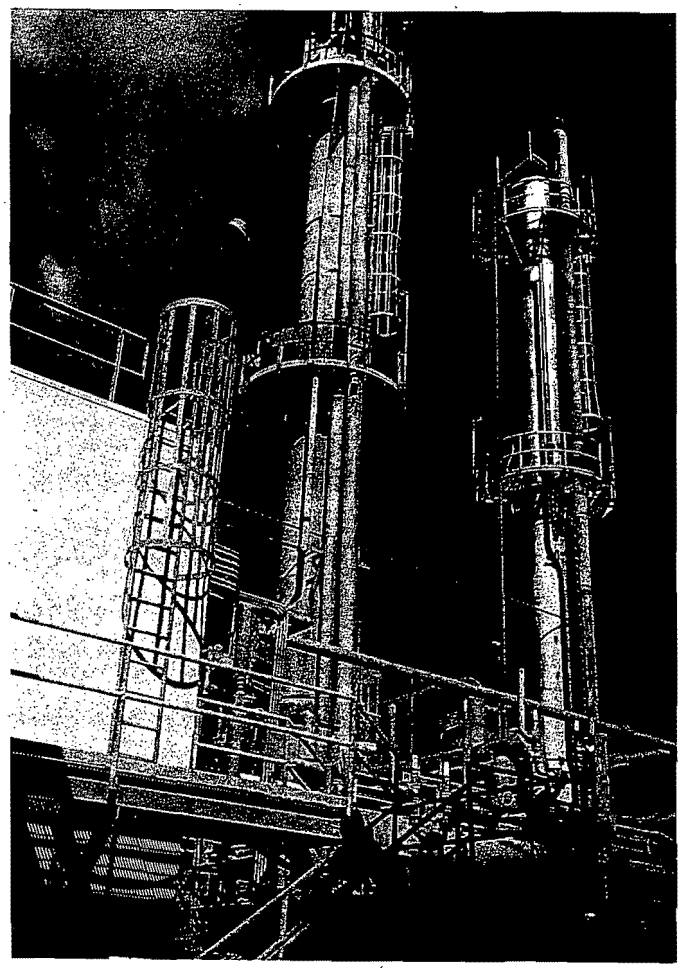
Pix (5) Floor drain with Hg



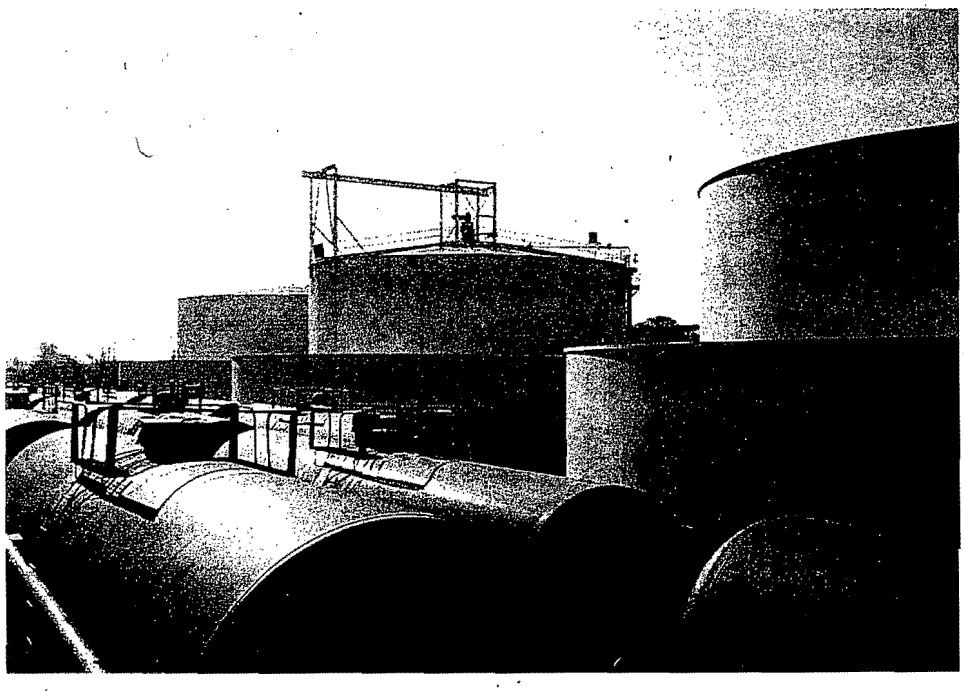
Pix (6) Portable blow down tank



Pix (7)
Holding tank # 1805



Pix (8)
A & B Strippers



Pix (9)
(L) to (R) Catoxid Feed Tanks # 2, 7, & 9,
and view of Catoxid rail car storage

FIGURE 2

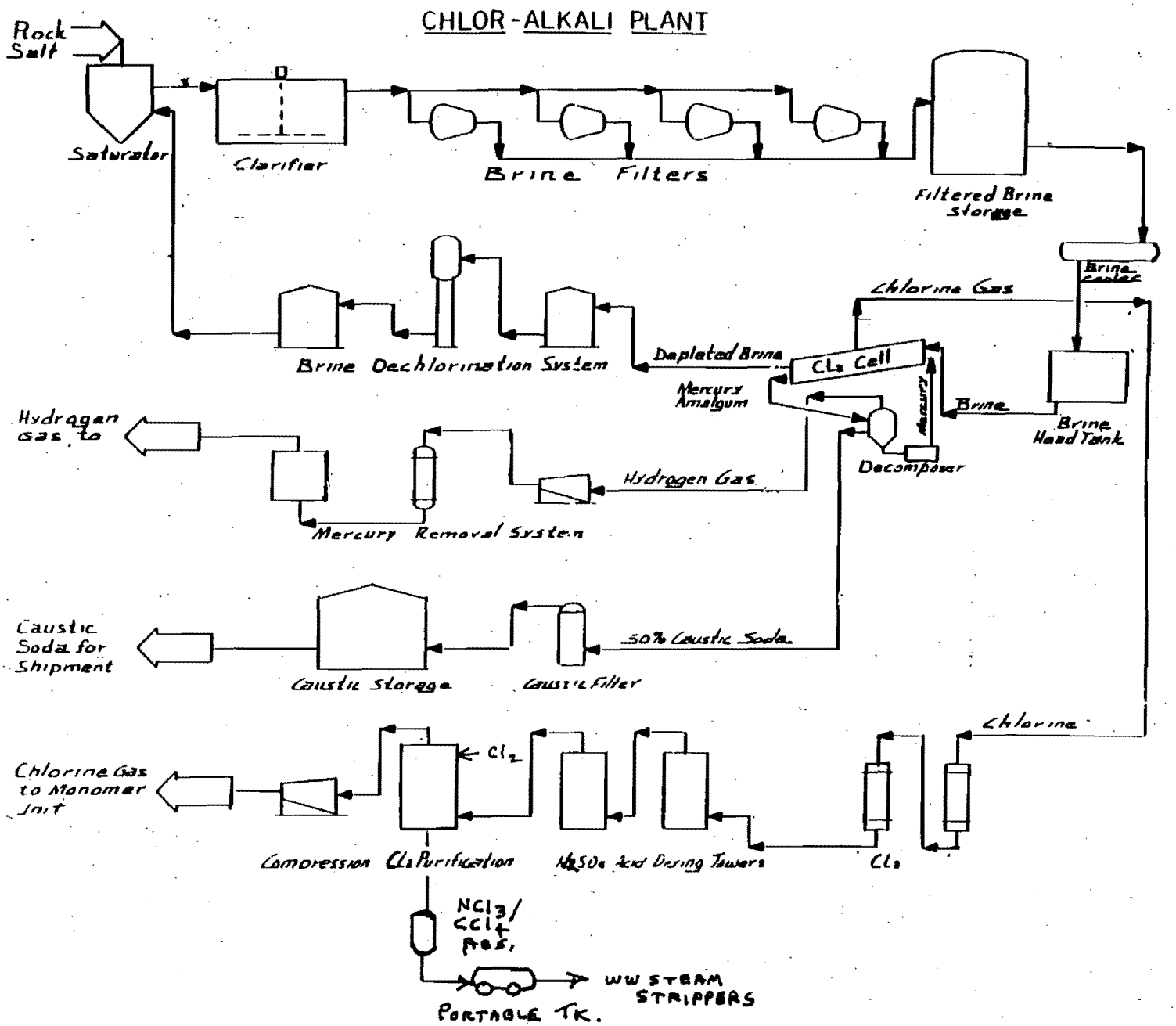
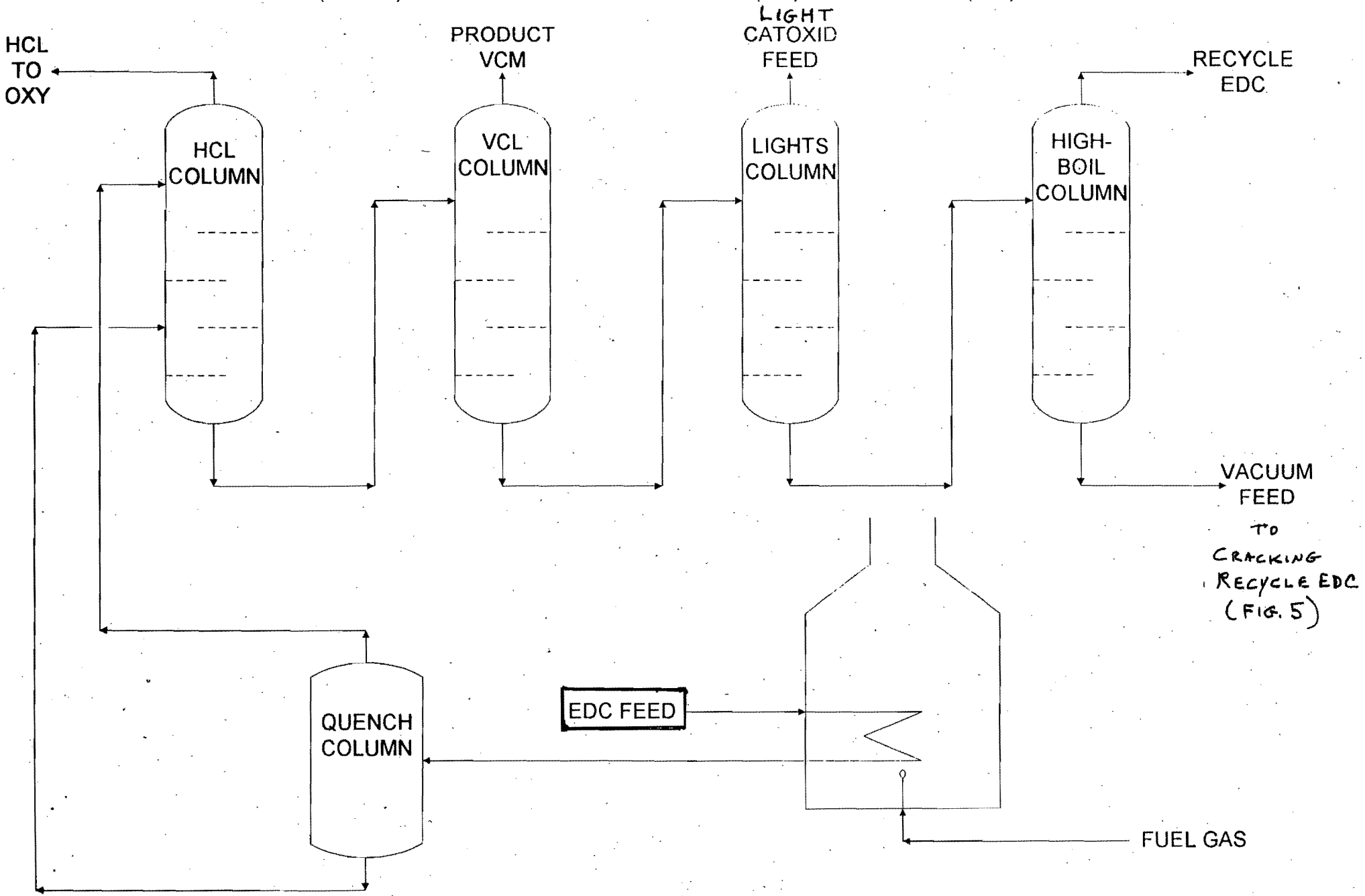

CHLOR-ALKALI PLANT
Rock Salt
Saturator
Clarifier
Brine Filters
Filtered Brine storage
Brine Cooler
Chlorine Gas
Brine Dechlorination System
Depleted Brine
Cl₂ Cell
Mercury Amalgum
Brine
Brine Head Tank
Mercury
Decomposer
Hydrogen gas to
Hydrogen Gas
Mercury Removal System
Caustic Soda for Shipment
50% Caustic Soda
Caustic Storage
Caustic Filter
Chlorine
Cl₂
Chlorine Gas to Monomer Unit
Compression
Cl₂ Purification
H₂SO₄ Acid Drying Towers
Cl₂
NCl₃/ CCl₄ Res.
WW STEAM STRIPPERS
PORTABLE TK.

FIGURE 3

WESTLAKE MONOMERS CORPORATION
EDC CRACKING PROCESS

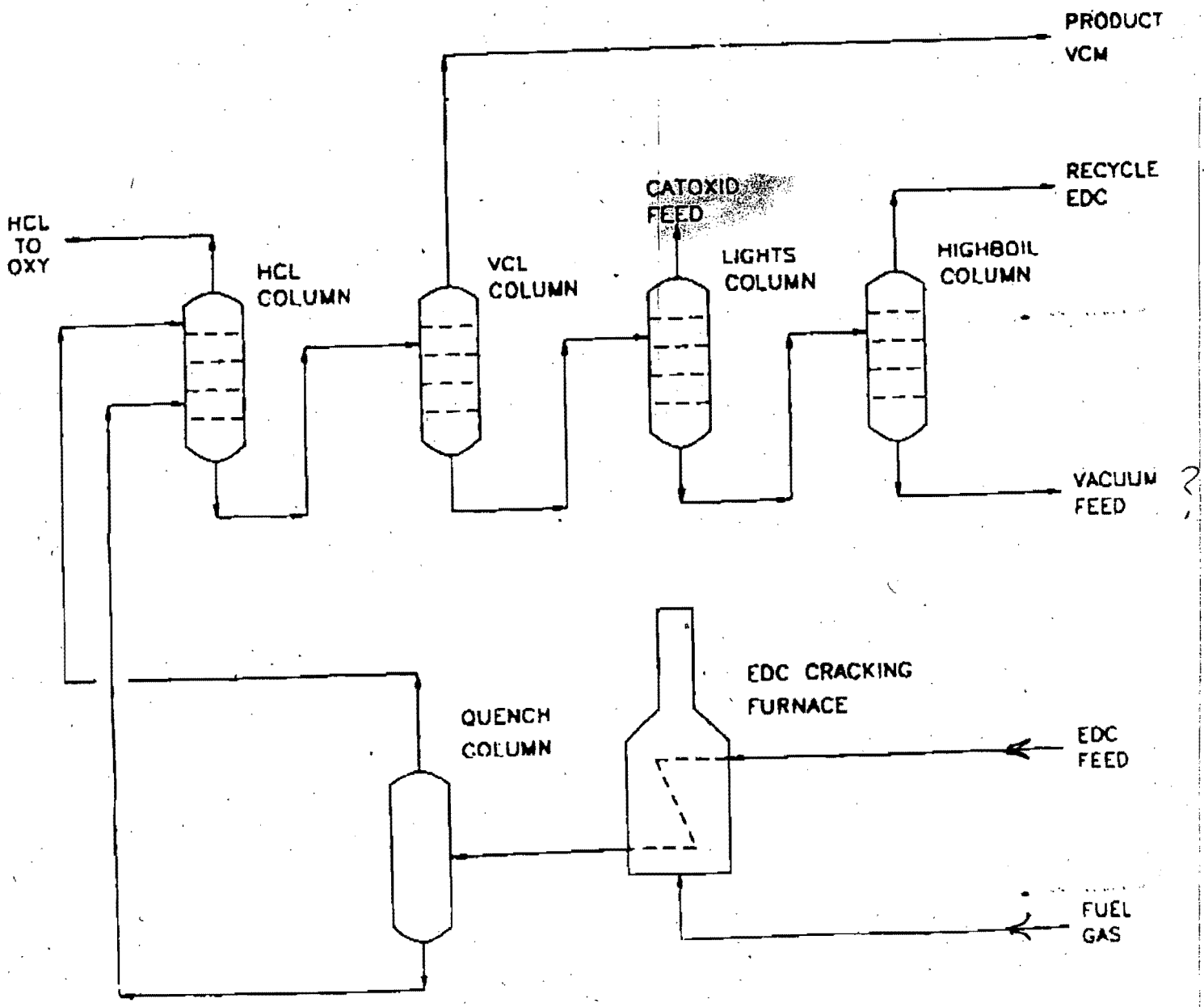
EDC ($C_2H_4Cl_2$) + HEAT ⟶ HYDROGEN CHLORIDE (HCL) + VINYL CHLORIDE (VCM)



EDC CRACKING PROCESS

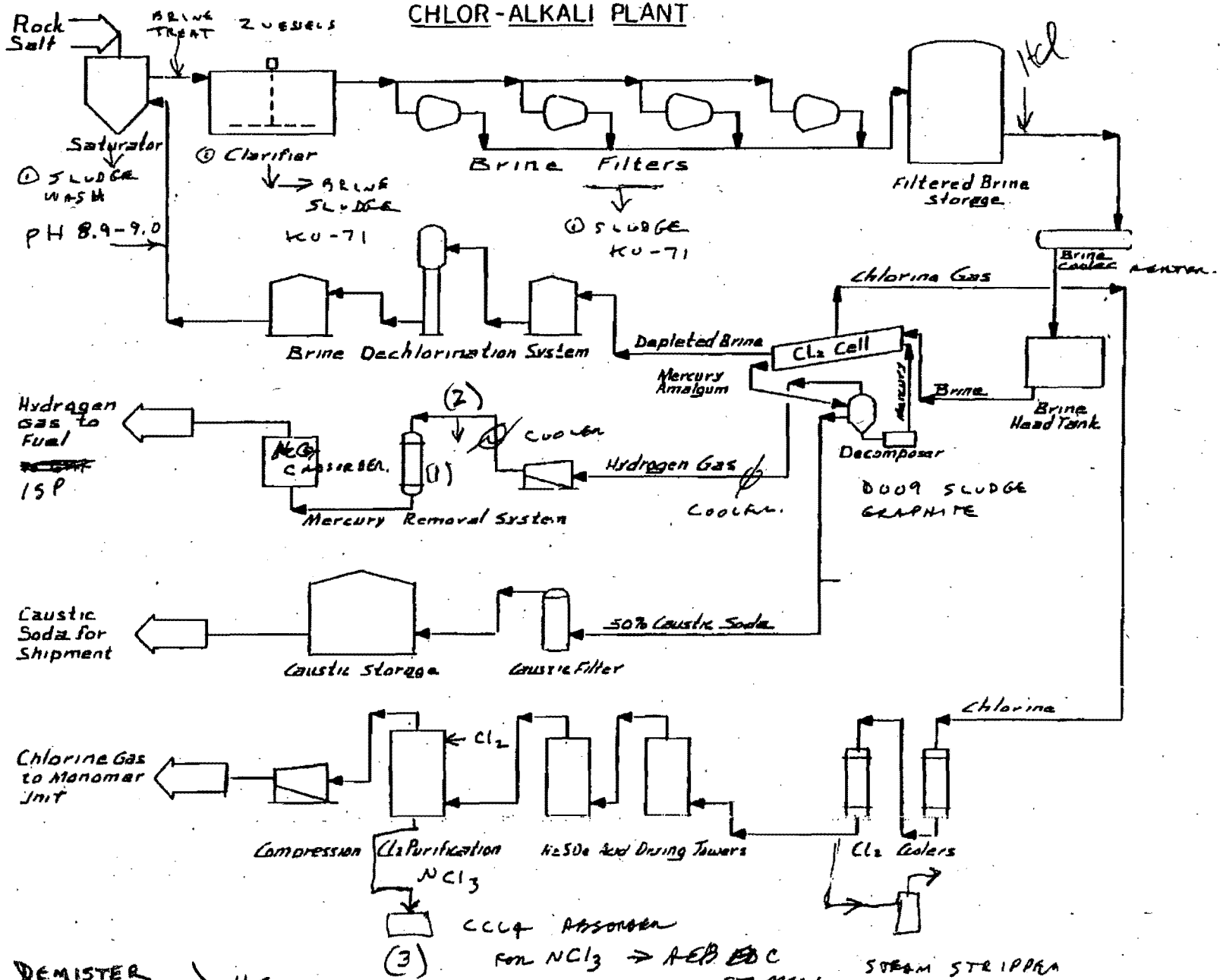
EDC + HEAT ⟶ HYDROGEN CHLORIDE + VINYL CHLORIDE (VCM)

$C_2H_4Cl_2$ + HEAT ⟶ HCL + C_2H_3Cl



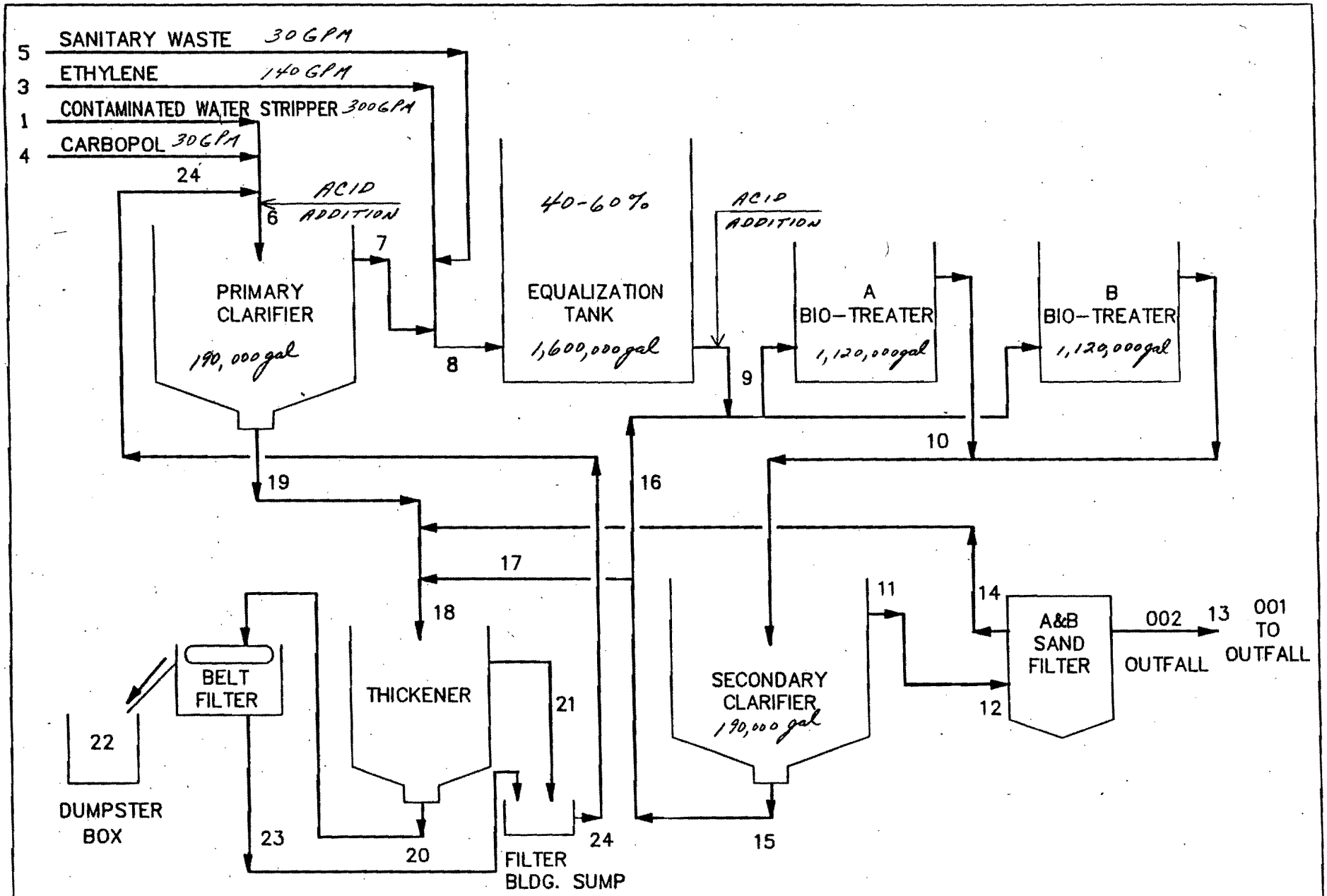
C-2 PROCESS DIAGRAMS
WESTLAKE MONOMERS, INC.
CHEMICAL SAFETY AUDIT
NOVEMBER 12-14, 1991

CHLOR-ALKALI PLANT



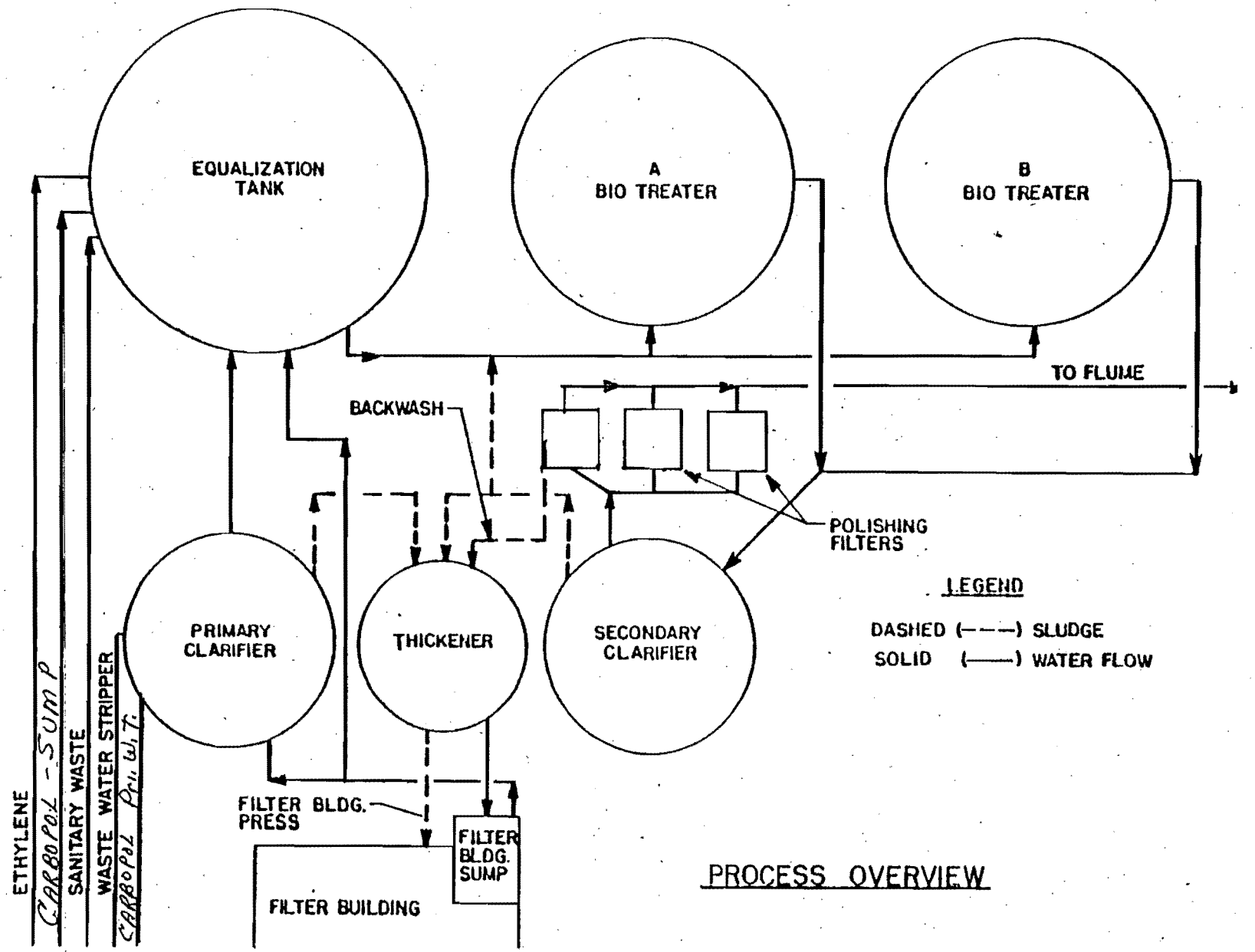
(1) DEMISTER
(2) LINE DRAIN
(3) NCl_3 REMOVAL

} HG REMOVAL



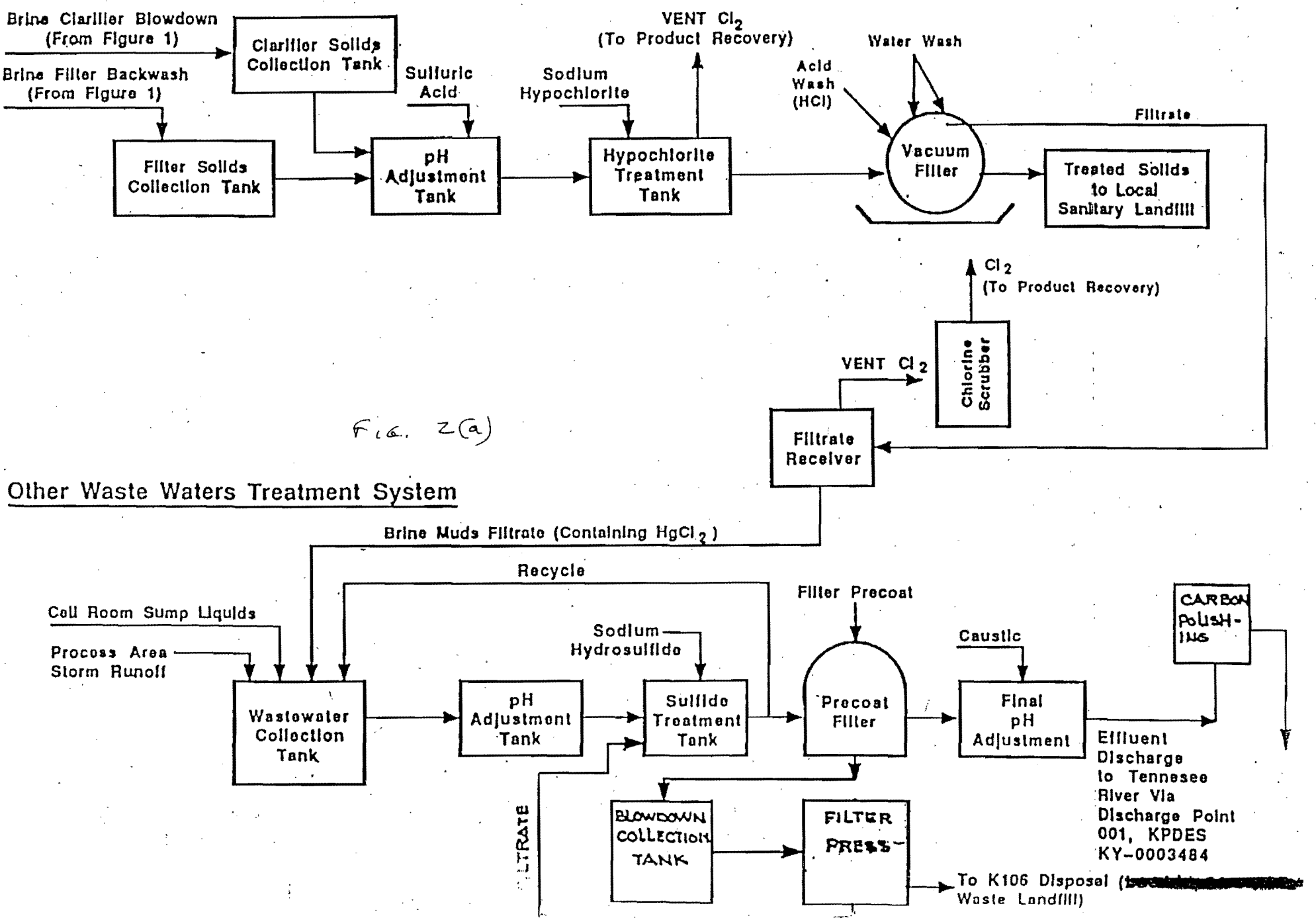
PROCESS OVERVIEW
SECONDARY WASTE TREATMENT

90317F01



PROCESS OVERVIEW

Figure 2 – Chlor-Alkali Waste Water Treatment



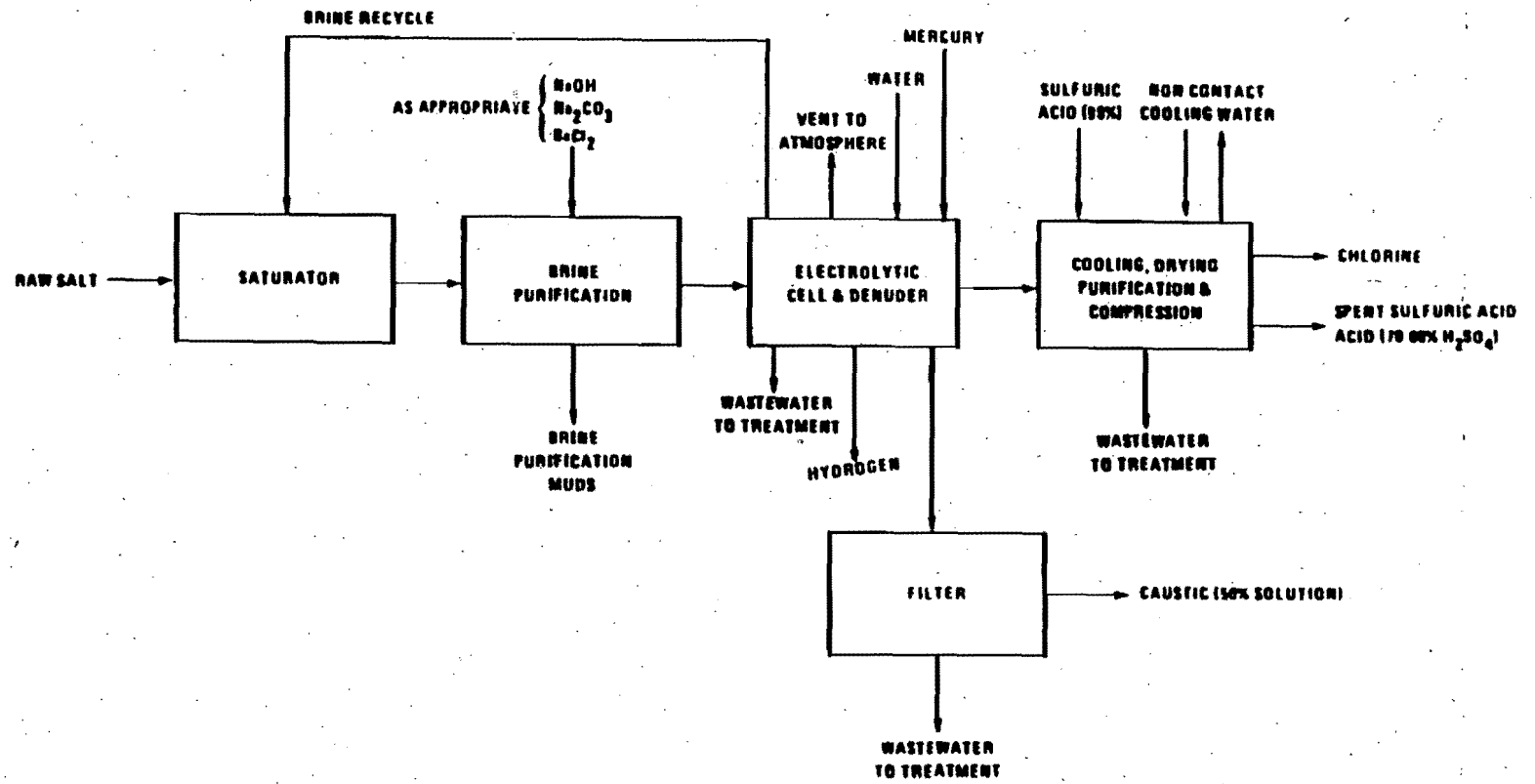


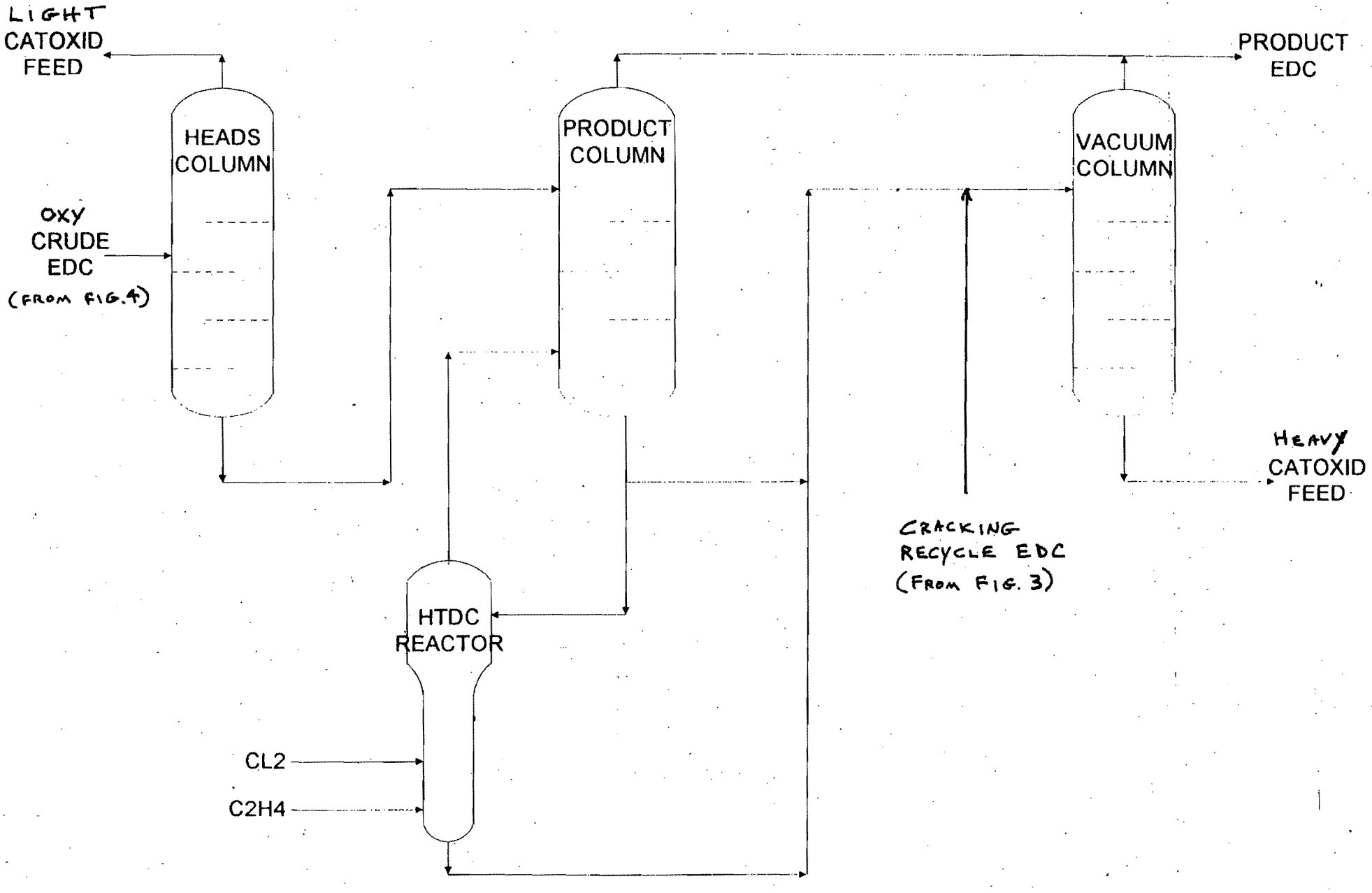
FIGURE II-6: MERCURY CELL PROCESS FLOW DIAGRAM

REFERENCE 171

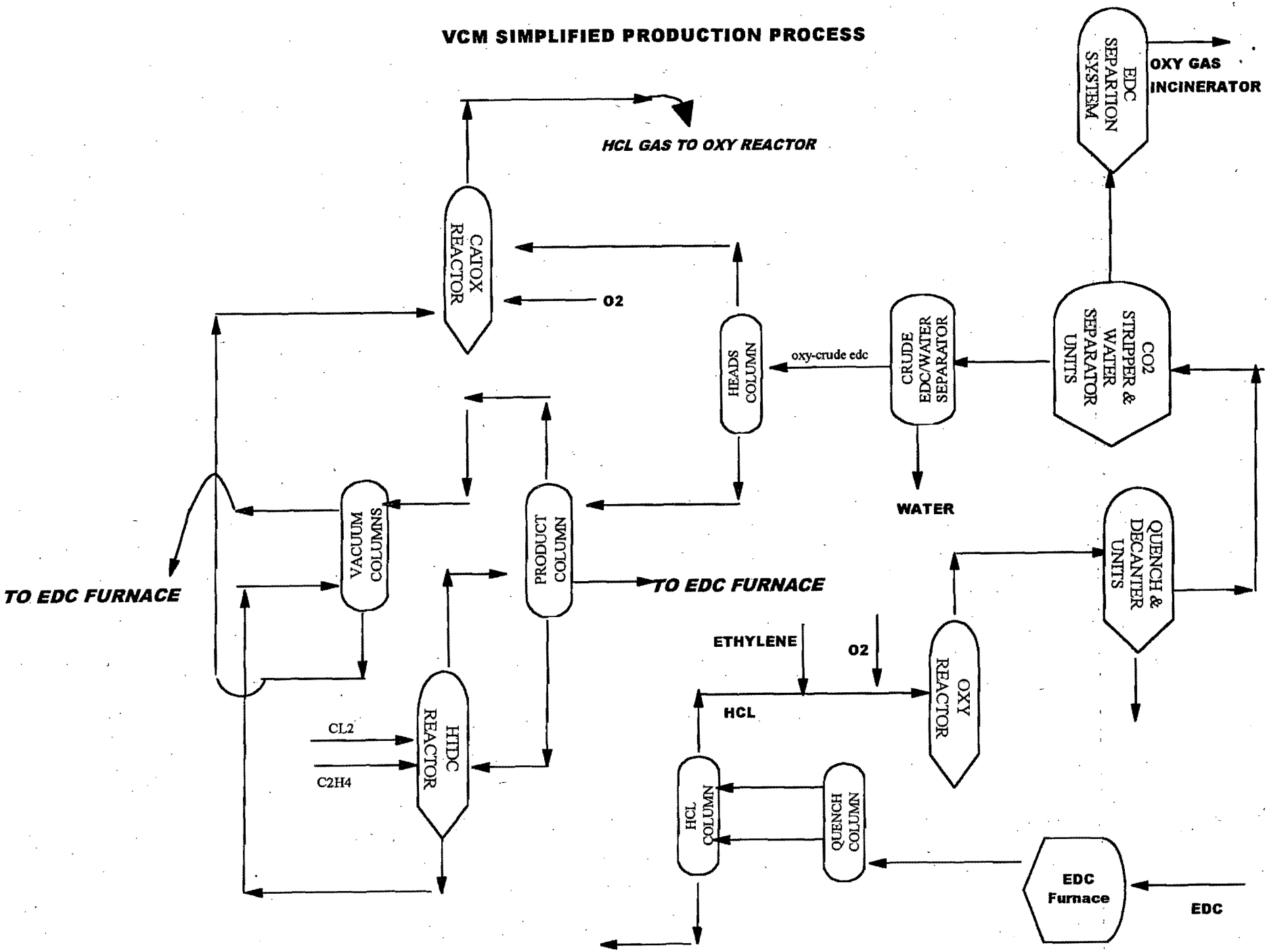
FIGURE 5

HIGH TEMPERATURE DIRECT CHLORINATION (HTDC)

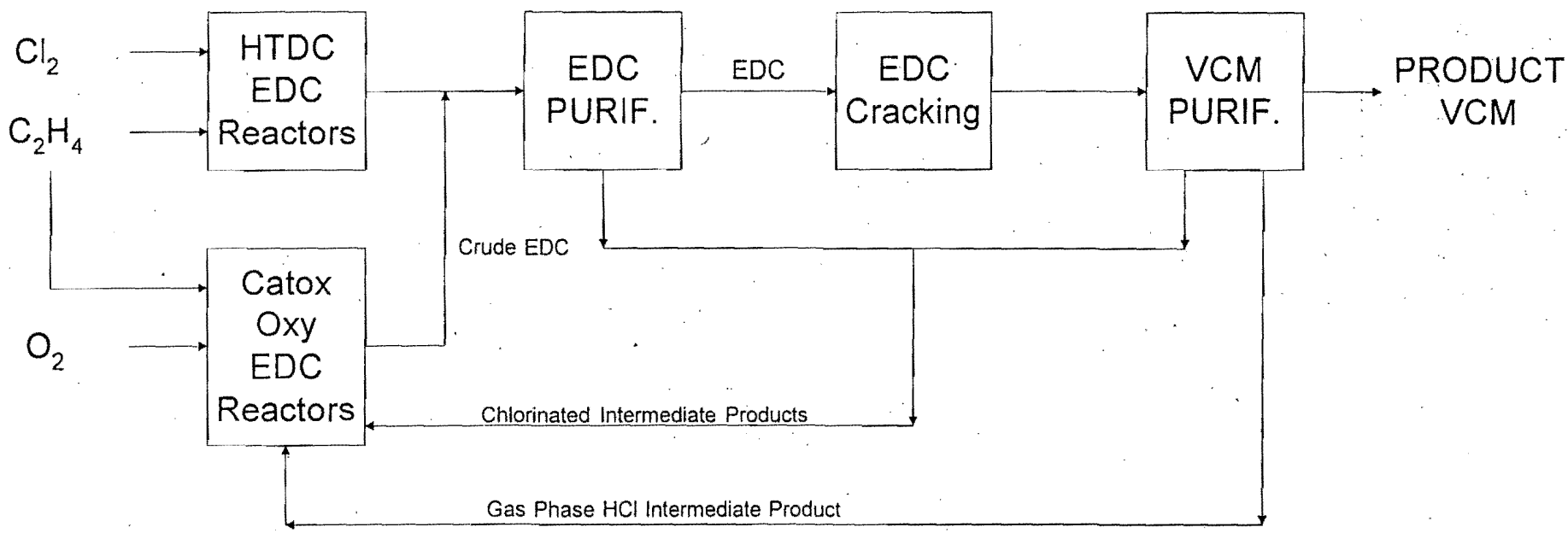
EHTYLENE (C_2H_4) + CHLORINE (CL_2) ---- ----► EDC ($C_2H_4CL_2$)



VCM SIMPLIFIED PRODUCTION PROCESS



WESTLAKE VCM PLANT



DIVISION OF WASTE MANAGEMENT
SITE INVESTIGATION REPORT

Site Name Westlake Monomers Corporation Identification # KYD-985-072-008

County Marshall Date 6/10/97 Time 9:50 a.m.

Purpose of Site Visit

[ ]Complaint [ ]Technical Assistance [ ]Sampling [ ]Closure [ ]Construction [ ]Follow-up

[X] Other Investigation of a release of ethylene dichloride from rail cars located at the Littleville Rail Spur in Paducah, Ky

Participants B. Parrish Roush, Env. Inspector III, Div. Of Waste Management
Ken Frye, Supervisor, Div. of Air Quality, Paducah R.O.

Findings

This report is documentation that on Tuesday, June 10, 1997 at 9:50 a.m. Mr. Ken Fry of the Division for Air Quality and a member the Departments Emergency Response Team went to the rail yard in the Littleville area of Paducah, Ky in response to a release that was discovered on Monday, June 9, 1997. Ken Fry and I approached the spill site. An area of excavation was observed. The area was roped off. Obvious chemical odors were also noted. I vacated the site in an upwind direction.

I contacted Mr. Don Hise, Environmental Manager, of Westlake Monomers to inquire about the spill. I asked Mr. Hise if the material spilled was actually ethylene dichloride as reported in the Paducah Sun Newspaper (Attachment I) or Catoxid Feed, still bottoms from the production of ethylene dichloride and vinyl chloride. Mr. Hise stated that it was Catoxid Feed but that the Department of Transportation did not acknowledge Catoxid Feed and that the proper DOT shipping description was ethylene dichloride. Catoxid Feed is about 19% ethylene dichloride.

I informed Mr. Hise that the odor was still strong at the site. He advised me that he would go down and check the scene out. He said that CECOS had been contracted for the clean-up. He said that they had excavated the area, collected samples and sent them to a lab in Madisonville to verify that the material was cleaned up.

I returned to the site on Monday, June 16, 1997. Additional excavation had occurred and no odors were apparent. Future follow-up regarding the clean-up will be conducted.

Report prepared by B Parrish Roush MW Date 6/30/97

Attachments:	Copies to: File

INCIDENT WORKSHEET CONTINUED

INCIDENT NO.: B 4681 PAGE NO.

DATE	TIME	ENTRY
06/09/97	1015 H	Received call from NR-2. Enroute to scene @ south yard of P&L Railroad in Paducah
	1030 H	on scene. Railcar is 20,000 gallon tankcar filled with approx 15,000 gallons product. A small hole (2 BB size) was discovered at ≈ 0915 H on 6/9/97. Hole is ≈ ½ way up side of tank. Unknown amount of product has leaked onto ground. Leak has stopped at this time. Billy Albritton, chief mechanical officer for P&L RR stated that CEECO contractors will be performing clean up operations.
		Entry team plugged hole with screw and Teflon tape at ≈ 1210 H.
	1220 H	Contractor on scene. Discussed clean up concerns with Pete Parker. Contaminated area was ≈ 15'x20' on outside of track and ≈ 3' Diameter area inside track under railcar.
	1240 H	Depart scene
6/10	0900	Return to scene with Parrish Ransch, environmental Inspector II with DWM. Area was marked with drums & tape. Some gravel & earth had been removed. A moderate odor of product was still noticeable. Parrish called Don Hise of Westlake Manners and confirmed that product was not pure EDC but was Cataxid feed. A still bottoms product from EDC/vinyl chloride production which contains ≈ 19% EDC, 19% Carbon Tetrachloride, 111 TCE & other assorted chemicals.

DIVISION OF WASTE MANAGEMENT

INVESTIGATION REPORT

Site Name Westlake Monomers Corporation Identification # KYD-985-072-008

County Marshall Date 12/11/96 Time 9:50 a.m.

Purpose of Site Visit

[X]Complaint [ ]Technical Assistance [ ]Sampling [ ]Closure [ ]Construction [ ]Follow-up

[X] Other Referral from The Kentucky Department of Work Place Standards, Occupational Safety and Health Compliance

Participants Mr. Donald R. Hise, Manager of Environmental Affairs
B. Parrish Roush, Environmental Inspector III, Division of Waste Management

Findings

On the morning of Friday, December 6, 1996 Hannah Helm notified me of a referral from a Kentucky Occupational Safety and Health Compliance Inspector that Westlake Monomers had a large amount of waste in tanks and rail cars that LWD, Inc. had refused to accept. I went to Westlake Monomers to investigate. Officials with Westlake Monomers did not have any knowledge of the situation described. The investigation was discontinued until the OSHA Inspector contacted me and provided additional information.

The inspector contacted me on the afternoon of Friday December 6, 1996. The inspector stated that Westlake Monomers had one hundred or so rail cars of Catoxid Feed located at the rail yard in the community of Paducah called Littleville. He stated that the material was a waste that LWD, Inc. would not accept and that the cars were placarded as ethylene dichloride. I informed the inspector that I knew LWD, Inc. accepted catoxid feed material and that it may not be clear whether the material in the rail cars is a waste or not.

I contacted Mr. Donald R. Hise of Westlake Monomers on December 9, 1996. Mr. Hise acknowledged that Westlake Monomers had 88 rail cars containing Catoxid Feed located at the rail yard in Littleville. I requested to be provided with records of the quantities of Catoxid Feed generated and used since January 1, 1991 and to be provided the locations of storage. Mr. Hise and I established a meeting for Wednesday, December 11, 1996.

I arrived at Westlake Monomers at 9:50 a.m. on 12/11/96. Mr. Hise presented Westlake Monomer Corporation's case that Catoxid Feed (distillation column bottoms from the production of ethylene dichloride and vinyl chloride were a coproduct or intermediate feedstock and not a waste. Mr. Hise presented the following process chemical reactions.

Report prepared by B. Parrish Roush Date 2/10/97

Attachments: Photographs
Exhibit I: MSDS Catoxid Feed
Exhibit II: 12/13/92 Letter from Westlake Monomers Corporation
Exhibit III: Site Investigation Report dated 12/11/96

Copies to:

DIVISION OF WASTE MANAGEMENT
INVESTIGATION REPORT CONTINUATION SHEET

Site Name Westlake Monomers Corporation Date 12/11/96

(1.) Ethylene and chlorine are reacted to produce crude ethylene dichloride. The crude ethylene dichloride is purified in a series of distillation columns producing still bottoms and ethylene dichloride.

$$C_2H_4 + Cl_2 - C_2H_4Cl_2 - still\ bottoms + C_2H_4Cl_2$$

(2) Ethylene dichloride is thermally cracked to produce vinyl chloride and hydrochloric acid in the vapor phase. The vinyl chloride is purified in a series of distillation columns generating still bottoms and vinyl chloride product. The HCL is recovered as muriatic acid.

$$C_2H_4Cl_2 - C_2H_3Cl + HCl - still\ bottoms + C_2H_3Cl$$

The distillation column bottoms from all distillations in the manufacturing of ethylene dichloride and vinyl chloride are combined and used as a raw material or feedstock commonly called Catoxid Feed. Catoxid Feed has a 75% chlorine content. A material safety data sheet dated July 13, 1990 is included in this report as Exhibit I. The MSDS identifies Catoxid Feed as a coproduct and intermediate EDC Product. The Catoxid Feed is introduced into the oxychlorination process which is patented by the BF Goodrich Company. The process involves introducing the still bottoms into the Catoxid Feed Reactor. The Catoxid Feed Reactor is a fluidized bed reactor with an aluminum oxide catalyst. Hydrochloric acid is recovered from the Catoxid Feed Reactor and introduced into the Oxy Reactors. The Catoxid Feed reaction by products CO, CO_2 and H_2O are incinerated. In the Oxy reactors; HCL, ethylene, and oxygen are converted into ethylene dichloride and water. The following two reactions summarize the Catoxid Feed Process for manufacturing ethylene dichloride.

(1)

$$Distillation\ bottoms\text{-}HCL + CO + CO_2 + H_2O$$

(2)

$$2HCL + C_2H_4 + O_2 - C_2H_4Cl_2\ H_2O$$

According to Mr. Hise, Westlake Monomers had 10 to 11 million pounds of Catoxid Feed material on hand when Westlake Monomers purchased the plant from the BF Goodrich Company in March of 1990. In 1992, the Catoxid Feed Reactor was down as the result of an explosion. Mr. Hise had a meeting with Mr. Ken Yates and myself in 1992 to discuss the potential problems of Westlake Monomers running

DIVISION OF WASTE MANAGEMENT
INVESTIGATION REPORT CONTINUATION SHEET

Site Name Westlake Monomers Corporation Date 12/11/96

out of storage space for the Catoxid Feed material. Mr. Hise inquired about storing the material off-site if Westlake Monomers was not able to reconstruct a Catoxid Feed reactor before storage space at the plant ran out. Mr. Yates and I agreed that the material was not a waste based on the information provided in the meeting. In the meeting, Mr. Hise explained that Region VI EPA and/or the Texas Water Commission had determined the material not to be a waste. We were also informed that the material had a value on the open market and could be sold as a raw material feedstock. I was of the understanding that the meeting ended on a note of hoping that the new Catoxid Reactor would be on line before Westlake ran out of storage space. I did not consider the material a waste and did not believe speculative accumulation would apply since the material was marketable as a product without further processing. At the time of the meeting I was not aware that Catoxid Feed was "an inherently wastelike material," a listed waste and still bottoms from the production process. I also was not aware of the chemical composition of the material which is "inherently waste like," a variety of chlorinated hydrocarbons.

During the December 11, 1996 meeting, Mr. Hise stated that Westlake Monomers had accumulated 40.655 million pounds of Catoxid Feed material in 1992. Mr. Hise stated that they had 40.7 million pounds on hand today. Mr. Hise reported that Tank #2 at the plant contained 5.2 million pounds; tank #3, 9.3 million pounds; tank #7, 10 million pounds. I was informed that 16 million pounds of Catoxid Feed material was stored in rail cars located at the Rail Yard in the community of Littleville in Paducah.

Mr. Hise attributed the accumulation problems as being due to mechanical down time for the Catoxid Feed reactor which he reported to be 40% of the time. Mr. Hise also informed me that Westlake Monomers has been planning the construction of a second Catoxid Feed reactor to eliminate down time. Mr. Hise stated that final corporate approval had been delayed due to the pending acquisition of the BF Goodrich Company's, Calvert City Plant that Westlake Monomers was pursuing but recently declined.

The December 11, 1996 meeting concluded with Mr. Hise explaining Westlake Monomer's position that Catoxid Feed Material is not a solid waste and that they did not believe that speculative accumulation provisions, or other provisions of 40 CFR 261 or 401 KAR Chapter 31 applied. Mr. Hise stated that Westlake Monomers would provide the records I requested regarding the quantities of Catoxid Feed generated and used when I was able to convince them that the material was subject to the provisions of 40 CFR 261 and 401 KAR Chapter 31. I informed Mr. Hise that I would research the subject further and get back in touch with him. Mr. Hise stated that he wished these questions had been raised during the 1992 meeting with Mr. Ken Yates and myself. I informed Mr. Hise that I had learned a lot since 1992. Specifically, I have learned a lot about Westlake Monomer's process and was more familiar with Catoxid Feed. I have also had to deal with speculative accumulation and the over accumulation of materials that are not normally considered wastes. I told Mr. Hise I would research the definition of solid waste and how speculative accumulation provisions apply to Catoxid Feed and call him.

I contacted Mr. Hise on the afternoon of 12/11/97. I informed him that my research concluded that Catoxid Feed is a byproduct. Not the primary product

RECORD OF COMMUNICATION

[ ] PHONE CALL [ ] DISCUSSION [ ] ON-SITE
[X] CONFERENCE [ ] OTHER [ ] ON-CALL

TO: Westlake Monomers Corp.
File KYD-985-072-008

FROM: B. Parrish Roush

DATE: 1/17/97
TIME: 9:00 a.m.

SUBJECT: Regulatory Status of Catoxid Feed

SUMMARY OF COMMUNICATION

This meeting was established as the result of investigation into a referral from the Kentucky Department of Workplace Standards, Compliance Division. The Investigation Report dated 12/11/96 and attached to this Record of Communication as Attachment I narrates the events and conversations that established this meeting. The primary purpose of this meeting was to determine if Catoxid Feed, still bottoms from Westlake Monomers' vinyl chloride manufacturing facilities, is a solid waste as defined in 40 CFR 261 or 401 KAR Chapter 31 and subject to the regulations authorized by the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984.

This meeting was attended by the following individuals:

Mr. Jerry D. Farmer, Vice President of Manufacturing, Westlake Monomers' Calvert City Plant
Mr. Donald R. Hise, Manager of Environmental Affairs, Westlake Monomers' Calvert City Plant
Mr. William J. Vore, Senior Counsel, Westlake Monomers, Houston Texas
Mr. Chris Hendrix,
Ms. Margie Williams, Environmental Control Supervisor, Ky Div. of Waste Management
Mr. B. Parrish Roush, Environmental Inspector III, Ky Div. of Waste Management

The meeting began with a technical review of the process by Mr. Jerry Farmer. Exhibit II.A contains a simplified block diagram of the process. Exhibit II.B contains a more detailed process flow diagram that was also used in discussions that took place. The Investigation Report in Exhibit I explains the process in a general manner which is consistent with the process information discussed in this meeting. The important technical points made in this portion of the meeting were the following:

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

Memorandum dated 2/7/97 to Mike Welch of the Hazardous Waste Branch requesting a technical review of the data submitted in this report.

INFORMATION COPIES

TO: Mike Welch, Manager, Hazardous Waste Branch

DIVISION OF WASTE MANAGEMENT
INVESTIGATION REPORT CONTINUATION SHEET

Site Name Westlake Monomers Corporation Date 12/11/96

of the chemical process. If possible, Westlake Monomers would convert all ethylene into ethylene dichloride and finally vinyl chloride, no still bottoms or heavy ends would be generated. I informed Mr. Hise that the still bottoms, Catoxid Feed, was specifically listed in 40 CFR 261.32 and 401 KAR 31:010, Section 4, as K019 and K020, heavy ends from the production of ethylene dichloride and vinyl chloride. I informed Mr. Hise that the still bottoms maintained in the process at the plant are excluded from being a solid waste by 40 CFR 261.4 and 401 KAR 31:010, Section 4(h). These regulations exclude secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided:

1. Only tank storage is involved and the entire process through completion of reclamation, is closed by being entirely connected with pipes or other comparable means of conveyance;
2. Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);
3. The secondary materials are never accumulated in tanks for over twelve months without being reclaimed; and
4. The reclaimed material is not used to produce a fuel, or used to produce products that are used in a manner constituting disposal, as provided in 401 KAR Chapter 36.

In the case of Catoxid Feed Material placed in rail cars this exlusion no longer applies. In the case of Catoxid Feed maintained at the plant in tanks, it is questionable whether the secondary materials are reclaimed within one year. According to Federal Register, Vol. 50 No. 3, 4 Jan. 1985, p 635:

"Speculative accumulation provisions apply to materials that are not otherwise considered to be wastes, when recycled-namely to materials that are to be used as ingredients or as commercial product substitutes to materials that are to be used as ingredients or as commercial product substitutes to materials that are recycled in a closed loop production process"

Further communication with Mr. Hise and Mr. Bill Vore, a corporate attorney representing Westlake Monomers, took place establishing a meeting time to further discuss the issue. Exhibit III is a Site Investigation Report for an inspection of the rail cars of Catoxid Feed located at the rail yard in the area of Paducah, Ky known as Littleville.

RECORD OF COMMUNICATION CONTINUATION PAGE

To: Westlake Monomers Corporation From: Division of Waste Management Date: 1/17/97

B. Parrish Roush Time: 9:00 a.m.

1.) No ethylene dichloride, EDC, is sold as product. In fact, Westlake Monomers does not manufacture enough EDC to supply the vinyl chloride (VCM) manufacturing facilities and supplements their supply by purchasing additional EDC from other suppliers. Supplemental chlorine is also purchased from off-site vendors in addition to that supplied by the neighboring B.F. Goodrich chlorine manufacturing facilities.

2.) EDC is an intermediate in the vinyl chloride manufacturing process.

3.) Westlake Monomers' Calvert City Plant maximizes their EDC and VCM purification process by increasing the quantity of still bottoms, Catoxid Feed, manufactured. Catoxid Feed or still bottoms are manufactured intentionally in a patented B.F. Goodrich Process.

4.) The Catoxid Reactor is a fluidized bed reactor containing an aluminum catalyst. The Catoxid Reactor operates at relatively low temperatures 900 to 1000 degrees. The reaction is exothermic. Steam is generated and thermal energy is recovered.

5.) The still bottoms introduced into the Catoxid Reactor contain a variety of chlorinated hydrocarbons and is about 70% Chlorine. All products of the Catoxid Reaction, chlorine, CO_2, CO and H_2O are piped to the Oxy Reactor where additional HCl, ethylene and O_2 is added to the reaction. This Oxychlorination Reaction results in manufacturing EDC which is introduced into the EDC purification process which again results in manufacturing EDC and still bottoms or Catoxid Feed. The CO_2, CO and H_2O are vented off the absorber to the incinerator. The Oxy incinerator is permitted by the Division of Air Quality with the following limits established:

1.) Continuous monitoring for VCM / 10 ppm max. VCM emissions
2.) 0.96 lb/hr particulate emissions, 4.2 tons/yr.
3.) 20% max. Opacity
4.) Min. Temperature 1300 deg. F and 0.5 sec. Retention time, Design is 2.5 sec. Retention time at 2,000 deg.

Mr. Bill Vore provided us with an overview of why Westlake Monomers Corporation believes Catoxid Feed is not a solid waste. Attachment III.A. contains a letter dated January 17, 1997 that was hand delivered by Westlake Monomers' representatives at this meeting. Attachment III.B. contains a summary of correspondence between B.F. Goodrich, Westlake Monomers and EPA Region VI and the Texas Water Commission. Mr. Vores' comments were essentially a summary of the correspondence in attachment III.A. and III.B. The highlights of the conversation that I recorded in my notes of the meeting are as follows:

RECORD OF COMMUNICATION CONTINUATION PAGE

To: Westake Monomers Corporation From: Division of Waste Management Date: 1/17/97

B. Parrish Roush Time: 9:00 a.m.

I. Catoxid Feed is not a by product:

1.) Catoxid Feed is intentionally produced to maximize the efficiency of the VCM process.

2.) VCM is the product of the production process, EDC is an intermediate product. The still bottoms or Catoxid Feed is also considered an intermediate product.

3.) All materials used in producing VCM, carbon and Cl, are in the original raw materials or feedstocks (EDC and HCl). No contaminants are introduced to the process. The Catoxid Feed is composed of only carbon and chlorine. Catoxid Feed is a substitute for raw materials ethylene dichloride and hydrochloric acid.

II. Catoxid Feed is not reclaimed:

1.) HCL is not recovered in a usable form from the Catoxid reaction. The reaction is complete. HCL is in a gaseous phase and; therefore, is not recovered.

2.) They are not removing contaminants or making HCL.

I informed Westlake Monomers' representatives that the Division of Waste Management would review the information supplied and make a determination of the status of Catoxid Feed as a raw material or solid waste. The meeting was adjourned at 10:30 a.m.

DIVISION OF WASTE MANAGEMENT

SITE INVESTIGATION REPORT

Site Name Westlake Monomers Corporation Identification # KYD-985-072-008

County Marshall Date 12/11/96 Time 9:50 a.m.

Purpose of Site Visit

[ ]Complaint [ ]Technical Assistance [ ]Sampling [ ]Closure [ ]Construction [ ]Follow-up

[X] Other Referral from the Kentucky Department of Work Place Standards, Occupational Safety and Health Compliance.

Participants B. Parrish Roush, Env. Inspector III, Div. Of Waste Management

Findings

This report is documentation that on Friday, December 13, 1996 at 3:00 p.m I went to the rail yard in the Littleville area of Paducah, Ky in response to the above referenced referral and as follow-up to the 12/11/96 Site Investigation at Westlake Monomers (See the Site Investigation Report dated 12/11/96). Upon arrival I observed a long line of rail cars reaching at least a quarter of a mile. The rail cars were placarded with ethylene dichloride placards, "EDC 1184".

On Wednesday, December 18, 1996 I returned to the rail yard to complete an inspection of the cars and ensure that no releases had occurred or were imminent. I observed that all of the EDC placards had been replaced with Flammable Liquid Placards. I walked each side of the cars and observed no releases or threats of any releases. I counted 80 rail cars. I photographed the rail cars. Photographs Number 7 and 8 illustrate the drains on the bottoms of the cars. I questioned the security of the tank cars containing Catoxid Feed from vandalism. Photographs Number 5 and 6 illustrate rail cars which at some point in time appear to have been overflowed or had material spilled on their exterior evinced by the loss of paint dried material on their exterior.

Westlake Monomers is preparing documentation that Catoxid Feed is not a waste and not subject to the speculative accumulation provisions of 401 KAR Chapter 31. This information is currently to be submitted to the Paducah Regional Office by January 17, 1997.

Report prepared by B. Parrish Roush MW Date 1/28/96

Attachments:	Copies to:
Photographs	